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ABSTRACT

As part of a larger investigation into the use of microcomputers in composition instruction, this report focuses on one instructional technique--sentence combining. Consisting of four parts, the report first provides the courseware and operating manual developed from the project. The second part includes specifications for instruction and content. Part three describes the computer programming and includes a list of the computer programs designed for the Apple II or Apple II Plus computer, with 48 K of memory, a disk drive, and a Mountain Hardware Appleclock card. The fourth part describes pilot studies conducted with the sentence-combining instruction. Five appendixes provide a discussion of microcomputer use in composition, a discussion of the use of computers in English instruction, a description of how sentence combining would fit into a larger computer based composition program (SWRL-TN-2-82/36), methods for evaluating textual responses, and a sequence for sentence combining instruction (SWRL-TN-2-82/25). (HOD)

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COMPUTER-BASED SENTENCE-COMBINING INSTRUCTION

FINAL REPORT

November 1982

COOPERATIVE INQUIRY ON
COMPOSITION INSTRUCTION
Deliverable 8.b

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COMPUTER-BASED SENTENCE-COMBINING INSTRUCTION

FINAL REPORT

November 1982

SWRL Educational Research and Development
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INTRODUCTION

Under a contract with the National Institute of Education, SWRL Educational Research and Development has been investigating the use of microcomputers in composition instruction. (See Appendix A for a discussion of microcomputer use in composition.) This research has focused on several aspects of composition instruction (see Appendix B). The present report describes the work on one technique that is useful for composition instruction--sentence combining. (See Appendix C for a description of how sentence combining would fit into a larger computer-based composition program.) Sentence combining was selected for major study for several reasons:

1. Considerable research is available that suggests the value of sentence-combining instruction.
2. Considerable research is available on how best to conduct sentence-combining instruction.
3. Sentence combining is relatively easy for students; thus, the addition of a new element--microcomputers--can be studied without major concern for the instructional technique.
4. Student responses for sentence combining can be specified; thus computer interaction with student text can also be specified--the first step toward more complex interaction between student text and the computer.

This report consists of four parts, plus five appendices. Part I provides the courseware resulting from this project, including the actual disk for use on an Apple II microcomputer. Part II includes the specifications for instruction and content. Part III describes the computer programming and includes a listing of the computer program. Part IV describes pilot studies conducted with this sentence-combining instruction.

Ann Humes had primary responsibility for this project and did the major work, including (but not limited to) specifying all the instruction, writing much of the content used, supervising the programming, assisting in the pilot studies, and directing the writing of most of the reports. Joseph Lawlor, upon whose studies of sentence-combining research much of the instruction is based, specified content for instruction and worked on many other parts of the project. William Simpkins and Jerry Bailey did the programming; Simpkins was especially responsible for the text editor, Bailey for completion and modification of instruction. Larry Gentry and Bruce Cronnell provided various assistance along the way, with Cronnell primarily responsible for conducting the pilot studies and for putting together this report.

COMPUTER-BASED SENTENCE-COMBINING INSTRUCTION

FINAL REPORT

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PART I

COURSEWARE

A. Operating Manual

B. Program Disk (removed)

THE SWRL SENTENCE-COMBINING PROGRAM

Operating Manual

Joseph Lawlor

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PROGRAM OVERVIEW

The SWRL Sentence-Combining Program provides computer-based instruction and practice on combining sentences, a technique that has been shown to be effective in helping students improve their written sentence structure.* The program is designed to be used by students in grade 6 or above.

As students work through the program, they are given a set of two or more short sentences and are asked to combine them into one longer sentence. The particular combining operations to be used are signaled by key words and/or punctuation marks enclosed in parentheses. These signals are called "joiners." The following sample exercise illustrates the use of the joiner (and):

Ana hit the ball.
Ana sent it soaring. (and) } Ana hit the ball and sent it soaring.

The SWRL Sentence-Combining Program includes one complete lesson containing four parts. The lesson covers the use of and for joining coordinate sentence parts.**

---

*See Appendix E of this report for background information on sentence combining.

**Part II, Section C of this report lists the complete content for this lesson; Part II, Section D provides content specifications for additional sentence-combining lessons.

HARDWARE REQUIREMENTS

In order to run the SWRL Sentence-Combining Program, you must have the following hardware components:

1. An Apple II or Apple II Plus computer, with 48K RAM and DOS 3.3.
2. A black-and-white monitor, or a black-and-white television set connected through an RF modulator.

   Note: Using a television set with this program may result in a poor text display. If at all possible, you should use a black-and-white monitor.
3. One disk drive, with the disk controller card installed in slot 6.
4. An Appleclock card (by Mountain Hardware) installed in slot 5.

ENTERING TEXT

The SWRL Sentence-Combining Program is equipped with a text editor that includes several important features. Although this editor functions much like a standard typewriter, there are some important differences between typing on the computer keyboard and typing on a typewriter. Before loading the program, you should familiarize yourself with the editing functions explained below.

The Cursor

When the program asks you to type a sentence, your first name will appear on the screen, followed by a question mark. Below your name, you will see a small line.. The screen will look like this:

```
Joe?

_
```

The small line below your name is called a *cursor*. The cursor shows you where the next letter that you type will appear. As you type, the cursor will move across the screen to the right, as in the example below:

```
Joe?

Pat ran in from left field_
```

The RETURN Key

On a regular typewriter, you press the RETURN key when you reach the end of a line (i.e., the right margin). On the computer, though, you don't do this. If a word will not fit at the end of a line, the computer will automatically move that word to the beginning of the next line. You do *not* press RETURN to advance to the next line while you are typing. The RETURN key on the computer has a special function. When you have finished typing your sentence, you must press RETURN to tell the computer that you are finished. The example below illustrates how to use the RETURN key:

Pat ran in from left field and made ← (Do not press RETURN at the end of a line.)
*a diving catch.*_
(Press RETURN here to tell the computer that your sentence is finished.)

Capital Letters

On a typewriter, you use the SHIFT key when you want to type capital letters. However, pressing the SHIFT key on the computer does not produce capital letters. To type a capital letter on the computer, you hold down the CTRL (control) key and press the letter A. Then you release A and CTRL and type the capital letter. To return to lower-case letters, you must press and release CTRL and A again. The computer does not automatically return to lower case after you have typed the capital letter.

Making Corrections

As you type your sentence, you may find that you have made a mistake. If you discover the mistake before you press RETURN, you can correct the error and then continue typing your sentence. After you have pressed RETURN, the computer may detect a spelling or typing mistake in your sentence. The computer will ask you to "fix" your sentence and will move the cursor to the first letter in your sentence. In either case, you can use the procedures described below to correct your mistakes.

Moving the Cursor

To move the cursor, press either the right or left arrow key (← or →). The cursor will move in the direction of the arrow, one letter at a time. If you want to move the cursor several letters to the right or left, press the appropriate arrow key and the REPT (repeat) key at the same time. The cursor will continue moving in the direction you have chosen until you release either the arrow or the REPT key. In the example below, you would use the right arrow key to move the cursor from the beginning of the sentence to the mistake in the word field:

> *Pat ran in from left feeld and made*
> *a diving catch.*

To correct a mistake like the one in this example, simply type the correct letter (in this case, i). You do not have to erase the incorrect letter before typing the correction. Then press RETURN to tell the computer that you are finished making corrections.

Removing Letters

To remove letters, move the cursor so that it is directly to the right of the letter that you want to take out. Then hold down the SHIFT key and press the comma key. The letter to the left of the cursor will disappear from the screen; e.g.:

> *Pat ran in fromm_left field and made*
> *a diving catch.* ↑
>
> (Press SHIFT-, to remove the
> extra letter; then press RETURN.)

Inserting Letters

If you want to insert letters or words into your sentence, move the cursor beneath the place in the sentence where you want to insert the letters. Then hold down the SHIFT key and press the N key. Next, release these keys and type in the letters. When you are finished inserting letters, you must press SHIFT-N again if you want to continue typing normally. In the example below, one word has been left out. To correct this sentence, you would use the arrow key to move the cursor beneath the letter m in made. Then you would press SHIFT-N and type in the word and. You must also type a space following the word. Finally, you would press SHIFT-N again to continue typing the rest of the sentence:

Pat ran in from left field made a

↖

(Press SHIFT-N, type the
missing word and a space,
and press SHIFT-N again.)

Summary of the Editing Functions

1. To move the cursor:

   Press ← or →

   Hold the REPT key to move several spaces.

2. To type a capital letter:

   Press CTRL-A.

   Type the letter.

   Press CTRL-A again.

3. To delete letters:

   Move the cursor so it is to the right of the letter.

   Press SHIFT-⊥.

4. To insert letters:

   Move the cursor where you want
   the letters to go.

   Press SHIFT-N.

   Type the letters (and spaces as needed).

   Press SHIFT-N again.

5. To tell the computer that you are finished typing:

   Press RETURN.

USING THE PROGRAM

Loading

To load the SWRL Sentence-Combining Program, use one of the two procedures outlined below, depending on the particular configuration of your Apple system. (Note that the program can be run only on systems equipped with DOS 3.3.)

- If your Apple has Integer BASIC in ROM, follow these steps:

    1. With the computer turned off, insert the program disk into drive 1, and close the gate.

    2. Turn the computer on, and the program will load and run automatically.

- If your Apple has Applesoft BASIC (floating point) in ROM, follow these steps:

    1. With the computer turned off, insert the program disk into drive 1, and close the gate.

    2. Turn the computer on, and the disk will begin to load. However, when the disk drive stops running, the computer will display the message "LANGUAGE NOT AVAILABLE." The computer will then pause, with the Applesoft cursor (]) on the screen.

    3. When you see the Applesoft cursor, type BRUN MAIN.OBJ. The Sentence-Combining Program will then load and run automatically.

In either configuration, after the program has started running, you must leave the program disk in drive 1, with the gate closed. The computer will have to read additional data from this disk as the program runs.

Introduction

When the program has finished loading, a title screen is displayed. After a short delay, the screen clears and you are asked to enter your first and last names. Use the text editing functions to enter your name with the appropriate capitalization.

Example Sequence

The next sequence in the program illustrates the sentence-combining procedures. The text at the top of the screen explains how the sentences are to be combined. In the middle of the screen, a set of sample sentences is combined by the computer. The machine "types" parts of the combined sentence after each step is explained.

During the example sequence, a flashing arrow in the left-hand margin directs the user's attention to the appropriate part of the screen. Delays have been built into the program to allow enough time for reading the material. However, you may speed up the pace of this sequence if you wish. To do so, press RETURN whenever the arrow or a word is flashing or whenever letters are being added to the sample sentence. Pressing RETURN will override the reading delays, causing the program to move to the next activity in sequence.

Practice Sequence

After the example sequence is completed, the program asks you to combine some sentences. First, the screen displays instructions for entering your sentences. You are asked to press RETURN after you have read these instructions.

When you press RETURN, the screen clears and the first set of practice sentences appears at the top of the screen. Below these sentences, your name is displayed, followed by a question mark. This prompt indicates that the computer is waiting for you to enter your sentence. At this point, you should type in your sentence, using the text editing functions, and press RETURN when you are finished.

Next, the program evaluates your sentence.* If your sentence is correct, you are given another set of sentences to combine. If the program detects an error in your sentence, a message explaining the error appears, and you are asked to correct your sentence. If the sentence still does not match the correct response after your corrections, the program branches to the example sequence for a review of the sentence-combining procedures.

After you respond correctly to three consecutive practice items, the program branches to the next part of the lesson. A new sentence-combining procedure is explained and illustrated, and you are asked to complete additional practice items.

Exiting the Program

You may exit the program for several different reasons, which are explained below. One of these exits can be initiated by the user, and the others are initiated by the computer. However, in this prototype version of the program, "exiting" does not actually halt the program. After you have exited, the program returns to the initial title screen and starts over from the beginning. (This configuration is useful for development purposes, allowing reviewers and pilot-study participants to run the program continuously without reloading after each exit.)

---

*See Appendix D of this report for a detailed explanation of the program's evaluation procedures.

Consequently, if you wish to halt the program, wait until the title screen clears and the program asks you to enter your name. Then turn off the power and remove the disk from drive 1.

The program terminates for any of the five reasons listed below.

1. You may exit the program by typing "bye" and RETURN at any point in the program where the machine is waiting for a sentence to be entered (i.e., whenever your first name and a question mark appear on the screen).

2. At several points in the program, you are asked to press RETURN (e.g., after entering a sentence or after reading instructions). If you do not press RETURN after approximately one minute, the computer again asks you to do so. If you still don't press RETURN after another delay, the program terminates.

3. If you answer three consecutive practice items incorrectly, the program terminates.

4. The program is equipped with a timer that allows each student to use the program for approximately 20 minutes in a single sitting. Consequently, when you have reached the time limit, the program informs you that it is terminating the lesson "for now" regardless of your performance on the practice items.

5. If you complete all four parts of the lesson successfully before the time limit has expired, the program informs you of your progress and terminates.

PART II

SPECIFICATIONS

Introduction

A. Original Version of Sentence Combining on the Microcomputer

B. Revised Version of Sentence Combining on the Microcomputer

C. Content for Lesson 1

D. Complete Content for Sentence Combining on the Microcomputer

PART II

SPECIFICATIONS

Introduction

This part of the report contains four papers that specify instruction and content for sentence combining on the microcomputer:

A. Original Version of Sentence Combining on the Microcomputer: This paper fully specifies an ideal program for sentence combining on the microcomputer. Following the paper are screen-display sheets that illustrate how the specifications are transformed into graphic displays on the computer. (Appendix D provides a prose description of some parts of these specifications.)

B. Revised Version of Sentence Combining on the Microcomputer: Because of problems (computer memory and programming time) in developing the original specifications, revised specifications were prepared. This paper presents these revised specifications--a "next best" choice for sentence combining on the microcomputer. The specifications in this paper are those actually programmed in the courseware found in Part I of this report. The specifications are presented first in prose and then as more detailed descriptions of content and processes.

C. Content for Lesson 1: Sentence-combining content (examples and practice items) for Lesson 1 are included in this paper. These examples and practice items are those actually used in the courseware found in Part I of this report.

D. Complete Content for Sentence Combining on the Microcomputer: Although only one sentence-combining lesson is currently programmed, this paper describes content specifications for a complete sentence-combining program of 12 lessons. The specifications are discussed in relation to studies of written language development and in comparison to existing sentence-combining curricula. Problems in sequencing sentence-combining instruction are described (see also Appendix E). In addition, several suggestions for the design of sentence-combining instruction are presented. An Attachment lists the scope and sequence of instruction, as well as sample items.

Original Specifications for Sentence Combining on the Microcomputer

Ann Humes

On the following pages is a set of specifications for the original version of sentence-combining instruction on the microcomputer. These specifications describe procedures, routines, and recordkeeping. These descriptions do not include specific content because they provide the frame for more than one lesson and for variable content that can be inserted as is appropriate. Points at which that variable content/information is programmed in are indicated by brackets around italicized words. In some cases, the information is the individual student's name--usually only the first, but sometimes the first and last. In other cases, the content is an example, a practice item, or an answer to a practice item.

The instructional content presented in the boxes in the attached descriptions is not formatted exactly as it should appear on the screens. Mock-ups of individual screens are required for this line division and for specific graphics.

Relatively simple tasks of coordination are covered in the first lesson to balance the learning load posed by other "content"--procedures for doing sentence combining, types of cues, using the computer appropriately. Subsequent lessons cover relativization (simple adjectives, participles, participal phrases, clauses) and adverbialization, as well as multiple kernels and uncued formats.

Lesson Initiation and Termination, and Record-Keeping

The student begins with the Log-On Routine, and the computer branches according to the student's responses.

The student terminates or her/his time is terminated under the conditions described in the Termination Routine.

Except for the grade-level number in the Introductory Procedure, the computer limits responses to alphabetical characters, periods, and commas.

The computer keeps a record of the time elapsed during the session and records the time elapsed between the display of *<student's name>?* and the beginning of the student's response. The computer also records whether the lesson is terminated by the student or by the computer. If the lesson is terminated by the computer, the computer records whether it is a time termination or an error termination. The computer also keeps a record of all the student's responses. The computer keeps a separate record of the number of items presented the student in each lesson, as well as the number of correct and incorrect responses. The recorded information is used to individualize instruction and to provide the teacher with information on student progress.

Lesson Prerequisite

The program requires a movable cursor so the student can correct errors rather than retype complete responses.

INTRODUCTORY PROCEDURE

1.

Combining Sentences
SWRL
Educational Research and Development
4665 Lampson Avenue
Los Alamitos, CA 90720

This material was prepared under contract No. 400-80-0108 with the National Institute of Education, Department of Education.

--> Graphic (monkey) animates screen by assuming various stances used in instruction.

If student responses are found on disk, program goes to Review Procedure. If no responses are on disk, student goes to next frame in Introductory Procedure.

2.

My name is *Combo*.

Please type your first and last names. Be sure you type correctly. Then push the RETURN key.

--> Monkey graphic is displayed on screen throughout Introductory Procedure. It moves down screen to guide reading. Names are filed so computer can call up student's subsequent instruction by name. Computer also does any necessary translation from name to code that is required for the filing system.

3.

Hi <*first name*>. Whenever you see <*first name*>? on the screen, I am asking for an answer.

After you answer, always push the RETURN key.

Let's practice. What grade are you in?

<*first name*>?

--> Monkey graphic waves.

Student's first name is displayed in angled brackets.

The grade number is filed.

INTRODUCTORY PROCEDURE (continued)

4\.

> Good, <*first name*>. Before we begin, I will tell you how to escape!
>
> If you want to stop at any time during the lesson, just type BYE when you see a question mark. I'll get the message.
>
> Push RETURN.

——> Student's first name is displayed on the screen.

REVIEW PROCEDURE

Monkey graphic is displayed throughout Review Procedure.

1. Please type your first and last names. Then push the RETURN key.

——> Computer uses first and last name to verify that student has his/her own disc. If no match is found, the computer displays the following, as monkey graphic appears puzzled and moves back to request for name:

> I do not know <*first & last name*>. Please type the name you used last time.

If the student does not change the name or if the response still does not match the name on the disc, the computer displays the following:

> I still do not find the name <*first & last name*>. Please get your teacher to help me.

The computer stops, leaving the display on the screen. Teacher or other adult will terminate by removing the disc or will type in the correct name.

2. Hello, <*first name*>.

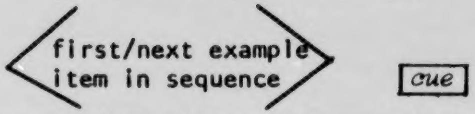
   Remember:

   - When you see <*first name*>? on the screen, I am asking for an answer.
   - After you type your answer, always push RETURN.
   - If you want to stop before the lesson is over, just type BYE when you see a question mark.

   Now push RETURN.

——> Computer locates the point at which the student left off in previous session, whether it is in the middle of a lesson (or a part of the lesson) or at the beginning of a new lesson. If the student is in the middle of a lesson part, the session begins with an example for that instruction; the example is the one in sequence not yet viewed by the student. (A count has been kept of the number of correct practice items for the previous session.) If the student has viewed all examples for that segment, the computer loops to the first example for that instruction.

EXAMPLE ROUTINE [Numbers outside the box identify displays for instructional subroutines and their explanations. When content requires different text for instruction, the display to be revised will be identified by the numbers, e.g., Revision of display for instructional subroutine 1]. [MATERIAL IN BROKEN-LINE BOXES LEAVES SCREEN BEFORE NEXT INSTRUCTION. EXAMPLE SENTENCES REMAIN ON SCREEN.]

		Graphic guides reading.
1.	Read these two sentences. Then look at the word in the box. Push RETURN.	——> The first two sentences appear above the example: the third appears below. When RETURN is pushed, the three instructional sentences leave the screen, but the item remains.
		
2.	When you combine sentences, you first move the word in the box to the beginning of the line.	——> There is a delay before these graphics: The boxed cue is pushed by graphic to just below the beginning of the same line(s).
3.	Then you take out the repeated words in that sentence.	——> This sentence does not appear on the screen until boxed cue(s) has been moved to the front of the line(s) (see above). After this sentence is displayed, with a delay, words to be deleted are pulled off the screen by graphics. Then instruction leaves the screen.
4.	You join the word in the box to what is left of the second sentence.	——> There is a delay before these graphics: The graphic pushes the boxed cue up into the space vacated by the deleted words. If the boxed cue does not use all the space vacated by the deleted words, the space is closed up by the computer.
5.	Then you use the word in the box to join all the words so they make one sentence.	——> There is a delay before these graphics: The graphic pushes the boxed cue and words remaining to the space just beyond the sentence above it. Then the graphic moves the boxed cue and the string of words up to the space above.
6.	But first you must take out the period at the end of the first sentence.	——> The graphic kicks out the period, which then falls out of the sentence and disappears. The box around the cue disappears, and the graphic pulls words together for normal spacing. Then graphic drops down below line.

EXAMPLE ROUTINE (continued)

Graphic exits screen.

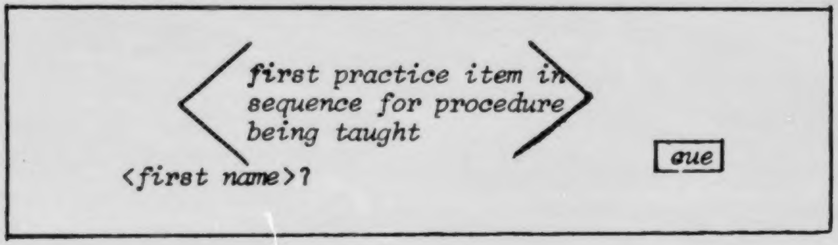
7. Read the sentence. Then push RETURN.

——> Sentence leaves the screen when RETURN is pushed. If this is not the first, but is the second or third example, the computer branches here to appropriate sequence in syntax routine (Syntax Routine 2).

8. Now you can combine some sentences yourself. For each set of sentences, take the time you need to type your answer carefully. Then check for spelling and typing errors before you push the RETURN key. Now push RETURN to see the first set of sentences.

——> Graphic appears on screen and guides reading.

9.


first practice item in sequence for procedure being taught

<first name>?

cue

——> Graphic pulls item onto screen and then moves down to the left of student's name.

The computer branches to the Item Processing Routine after the student types in the response.

ITEM PROCESSING PROCEDURE FOR PRACTICE ITEMS

The following steps are completed in sequence, with branching as necessary. Each frame is displayed concurrently with item stimulus and response being processed, but the frame leaves the screen before the next processing instruction is displayed. To guide reading, graphic moves between practice item to new text on screen.

1. [The computer checks for a capital letter at the beginning of the student's response. If there is no capital, the computer displays the following:]

```
Please change the first letter to a capital.  Then push
RETURN.
```

2. [The computer checks for a period at the end of the sentence. If there is no period, the computer displays the following:]

```
Please add a period at the end of the sentence.  Then
push RETURN.
```

3. [The computer checks for the cue(s). If the cue(s) is (are) not in the response, the computer displays the following:]

```
Your sentence should have '<cue(s)>' in it.  Please add
'<cue(s)>' in the correct place.  Then push RETURN.
```

[If the student does not add the cue within 20 seconds, the computer branches to the Syntax Routine.]

4. [The computer checks the sentence for the correct number of words.]

   [a. If the number of words is less than the correct number, the computer displays the following:]

```
I am having trouble with your answer.  Have you left out
any spaces or words?  Please fix your sentence.  Then push
RETURN.
```

[b. If the number of words is greater than the correct number, the computer displays the following:]

```
I am having trouble with your answer.  Have you put in any
extra spaces or extra words?  Please fix your sentence.
Then push RETURN.
```

[If the student makes a correction, the computer checks the sentence for the correct number of words. If the number is still not correct, or if the student does not make changes, the computer branches to the Syntax Routine.]

5. [The computer checks each word for a match, accepting words with an adjacent extra space. For each mismatch, the computer displays the following:]

```
Are you sure you meant to write '<mismatch>'?  Check the
sentences at the top for the correct way to write the word.
Please fix the word.  Then push RETURN.
```

[The cursor moves to the mismatched word, which flashes in the student's response on the screen.]

[a. If the mismatch is a spelling error (see * below) and the student does not correct the mismatch within 30 seconds or corrects it inappropriately, the computer displays the following:]

```
I think you mean to write <correct word>.  To correct your
answer, just press RETURN.
```

[The computer corrects the student's response when the return key is pressed.]

[b. If the mismatch is not a spelling error and the student changes the answer, the computer loops to step 1 in the Item Processing Procedure.]

[c. If the mismatch is not a spelling error and the student does not correct the answer, the computer branches to the Syntax Routine.]

---

*Misspellings: inappropriate punctuation marks adjacent a word; doubled/non-doubled letters; transposed letters; a/an; one missing letter; one extra letter; one wrong letter; inappropriately capitalized/uncapitalized words other than first word of sentence (this misspelling does not apply if student types in all caps).

6. [For a correct answer, the computer branches to the Progress Routine, displaying Progress Routine No. 1 at the bottom of the screen for this previously processed item. However, if the practice item is the third correctly answered item and is not as the end of a lesson, the computer displays the following:]

a.

> Right again, <*first name*>! Now let's learn another way to combine sentences. Push RETURN.

[The computer then goes to the next instruction in the lesson sequence, branching to Example Routine to initiate that instruction.]

[If the practice item is the third correctly answered item and the student (1) is at the end of a lesson and (2) has been on the computer for 10 minutes or less, the computer displays the following:]

b.

> Right again! You're doing very well, <*first name*>. Now you can start a new lesson on sentence combining. Push RETURN.

[The computer then goes to the next lesson in sequence, branching to Example Routine to initiate that lesson.]

[If the practice item is the third correctly answered item and the student (1) is at the end of a lesson and (2) has been on the computer for more than 10 minutes, the computer goes to the appropriate Termination Routine.

PROGRESS ROUTINE

[Graphic jumps up and down and following text is displayed at bottom of screen with correct response that has been processed:]

1. Very good, *<first name>*. Press RETURN to try another set of sentences.

2. *<next item in sequence>*

   <first name>?

[Screen displays next item in sequence. After student types in the response and pushes the RETURN key, the computer branches to the Item Processing Routine.]

SYNTAX ROUTINE

[The stimulus and the incorrect response are still on the screen. Graphic guides reading. The correct answer flashes several times.]

1.

> I was looking for a different answer. This is a good way to combine these sentences:
>
> *<answer to missed item>*
>
> Let's go over another example. Press RETURN to continue.

[The computer displays the next example (Example Routine to point of return branching to Syntax Routine). After the example, the computer displays the following sentence:]

2.

> Now I think you are ready to try again, *<first name>*. Press RETURN to try another set of sentences.

[The computer displays the next item in sequence and then goes through Item-Processing Procedure for Practice Items.]

3. [After student is branched through a third example, a third consecutive mismatch for syntax that causes branching to Syntax Routine elicits this response from the computer, which then terminates the lesson:]

> That is enough for now. We will work on this again later. Goodbye, *<first name>*.

[Graphic waves.]

TERMINATION ROUTINES

1. [When the student has completed an entire lesson, and (1) it is not the last lesson, (2) the student has been on the computer for more than 10 minutes, the computer displays the following:]

> Good work <*first name*>. You have completed this lesson. We will do some more sentence combining later. Goodbye, <*first name*>.

[The computer files the student's work. If the student has been on the computer for 10 minutes or less, the computer continues instruction with a new lesson (see Step 6 of Item Processing Procedure).]

----

2. [When the student has completed the last sentence-combining lesson, the computer displays a figure with an unscrolled diploma; the word "Diploma" is at the top; below that word is "<*first & last name*> has completed the sentence-combining lessons." Below the figure and the diploma, the computer displays the following:]

> Congratulations, <*first name*>. You have finished all the lessons.

[The computer "beeps" three times. The computer files the student's work.]

----

3. [If the student's operating time on the computer is close to 20 minutes, the computer, at the point where it is about to branch to either the Progress Routine or the Syntax Routine, displays the following:]

> That is enough sentence combining for now. We will do some more later. Goodbye, <*first name*>.

[The computer files all the student's work during the operating time and logs the student off the computer. A count is kept of the number of practice items for that combining procedure.]

----

4. [If the student types BYE at any time when the computer is waiting for input, the computer responds with the following:]

> Goodbye, <*first name*>. We will do some more sentence combining later.

[Then the computer files the student's work during the operating time and logs the student off the computer.]

----

5. [If the student does not begin to respond with an answer for a practice item within one minute, the computer displays the following:]

a.

> These sentences may be difficult. If you want to go back to the example, just push RETURN.
>
> <*first name*>,?

[The computer then branches to the previous example when the key is pushed. If the student does not press the key within 30 seconds, the computer displays the following:]

b.

> If you want to stop now, just push RETURN.
>
> <*first name*>?

[The computer terminates when the key is pushed and student's work is filed. If the student still does not respond within another 30 seconds, the computer files the student's work and terminates the session.]

----

6. [If, within 15 seconds, the student (1) does not respond to a command/question displayed in the Introductory Procedure, the Review Procedure, or the Example Routine, or (2) does not push RETURN where it must be pushed to continue the lesson, the computer displays the following at the bottom of the frame not responded to:]

> I am waiting for <your answer/you to push RETURN>. If you do not <answer/push RETURN>, I must say goodbye.

[If the student does not respond within 30 seconds, the computer replaces the above frame with the following frame:]

> I'm sorry. Goodbye.

[The computer files the student's work and terminates the lesson.]

TERMINATION ROUTINES (continued)

7. [At any point where the student responds to a command/question but does not push the RETURN key within 30 seconds after the response, the computer displays the following frame:]

> When you have finished your sentence, please push the RETURN key. If you do not, I must say goodbye.

[If the student does not push the RETURN key within 15 seconds, the computer replaces the above frame with the following frame:]

> I'm sorry. Goodbye.

[The computer files student's work and terminates the lesson.]

COMPUTER-BASED SENTENCE-COMBINING INSTRUCTION

SCREEN-DISPLAY SHEETS

On the following pages are screen-display sheets for computer-based sentence-combining instruction. These sheets indicate approximate screen design for text and graphics. The screens correspond to the descriptions given in the preceding detailed specifications.

SCREEN: Introductory Procedure - Screen 1

COMBINING SENTENCES

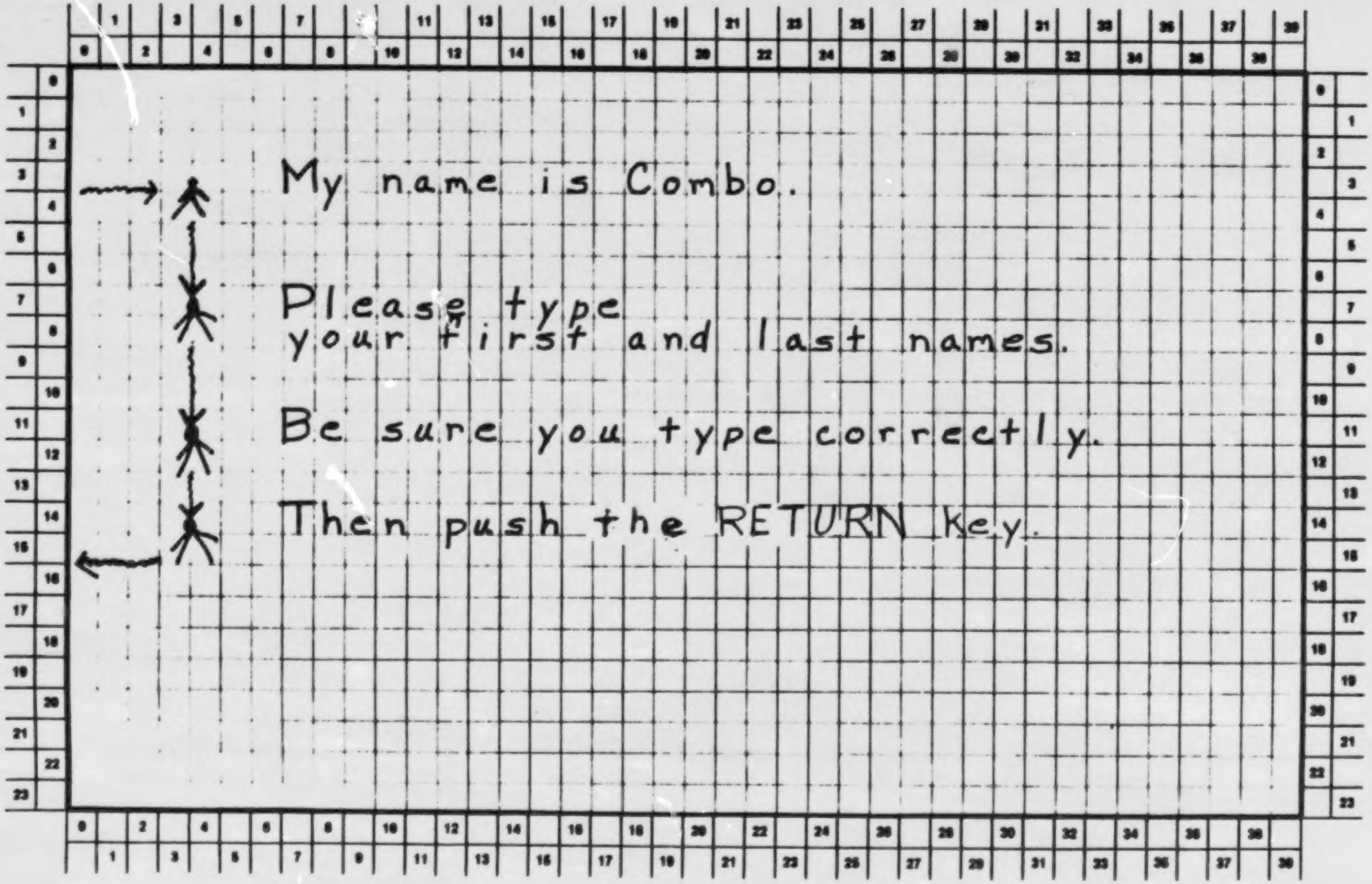
SWRL
Educational Research and Development
4665 Lampson Avenue
Los Alamitos, CA 90720

This material was produced under Contract No. 400-80-0108 with the National Institute of Education, Department of Education.

COMMENTS

Monkey graphic animates screen by assuming various stances used in instruction.

SCREEN: Introductory Procedure - Screen 2



My name is Combo.

Please type
your first and last names.

Be sure you type correctly.

Then push the RETURN key.

COMMENTS

Monkey moves on screen; text appears.

[Delay]

Monkey moves down; text appears.

[Delay]

Monkey moves down; text appears.

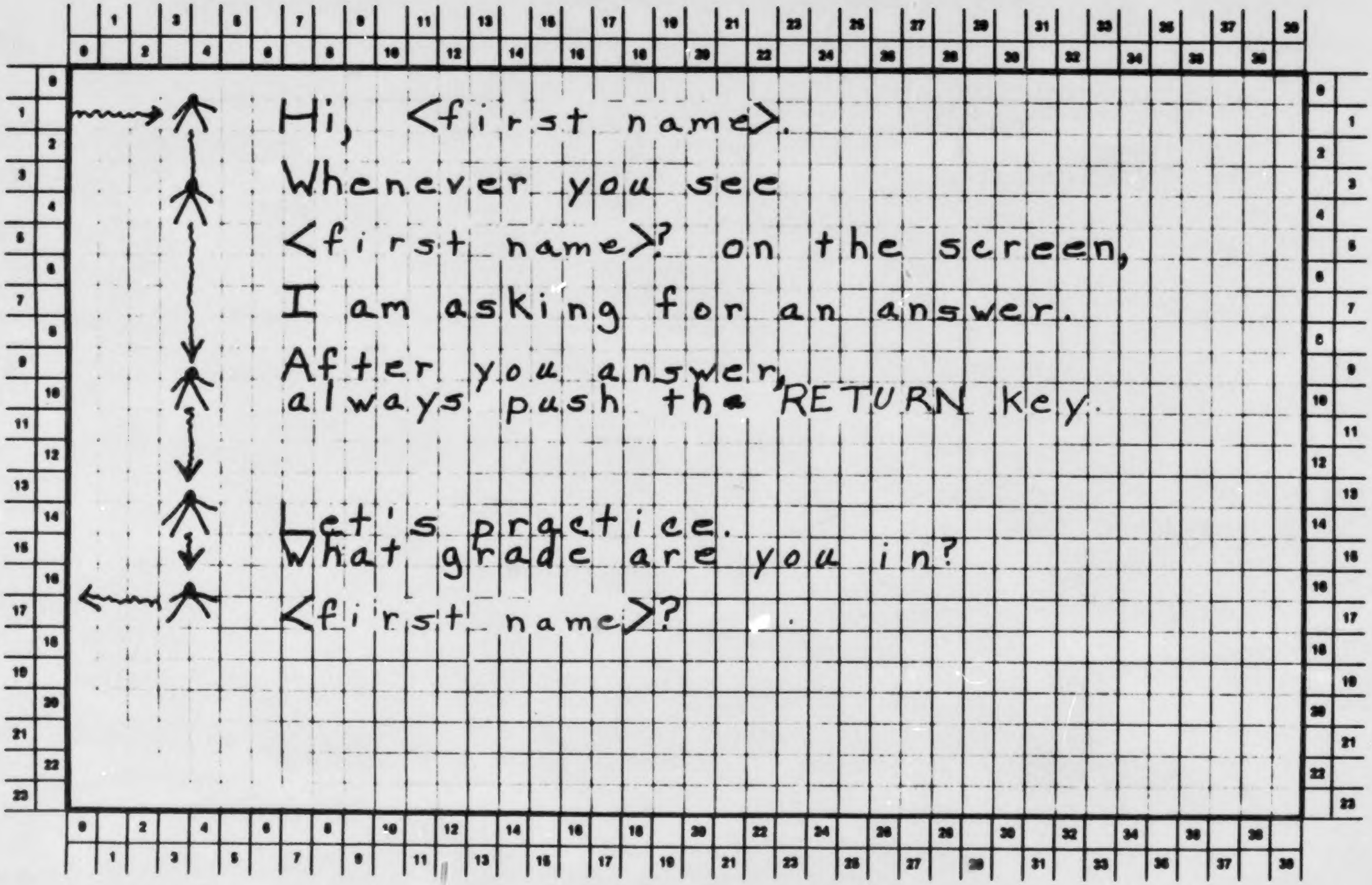
[Delay]

Monkey moves down; text appears.

Student enters name.

Monkey moves off screen left; screen clears

SCREEN: Introductory Procedure - Screen 3



Hi, <first name>.

Whenever you see

<first name>? on the screen,

I am asking for an answer.

After you answer,

always push the RETURN key.

Let's practice.

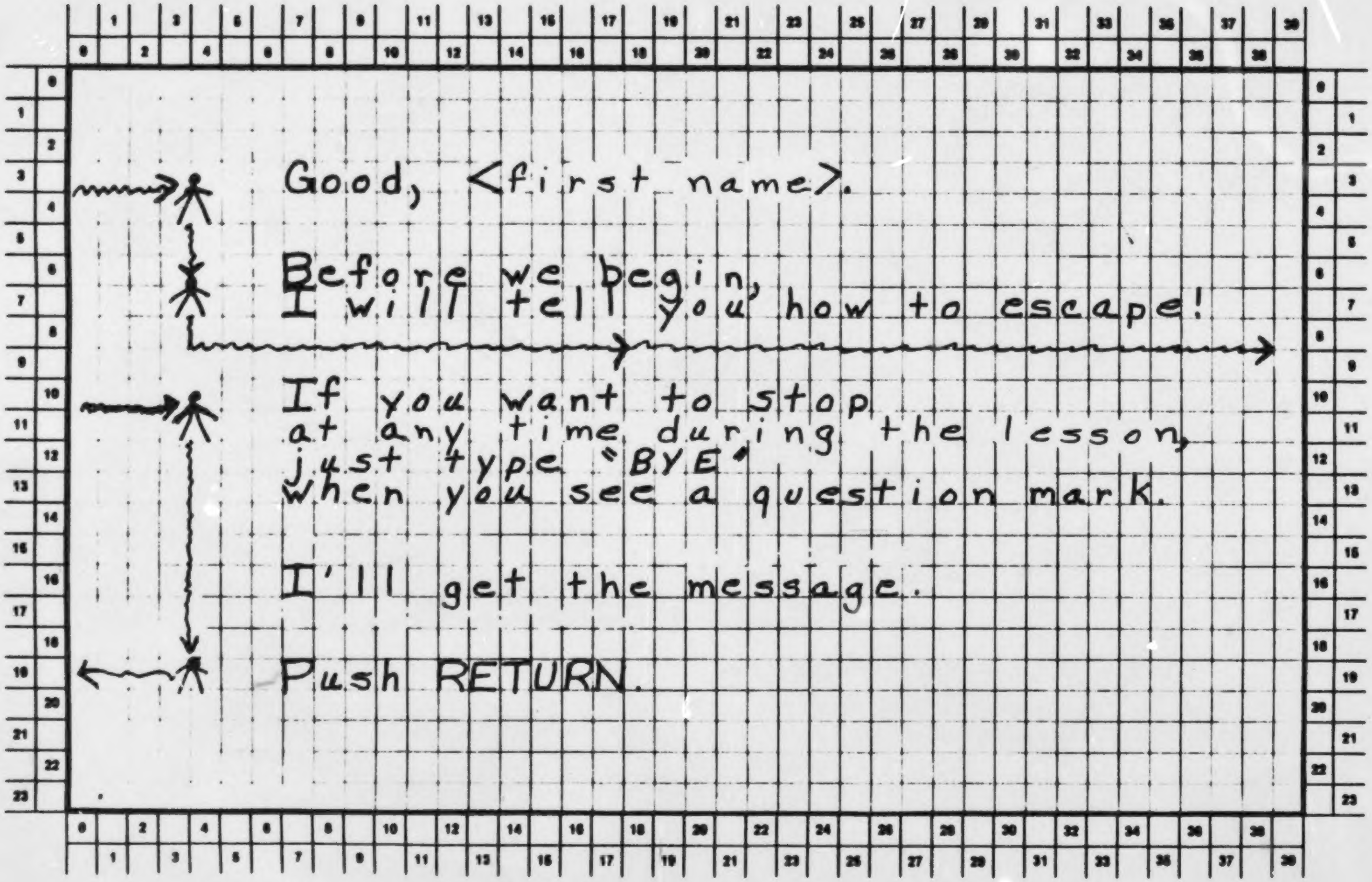
What grade are you in?

<first name>?

COMMENTS

Student enters grade level;
Monkey moves off screen;
Screen clears.

SCREEN: Introductory Procedure - Screen 4



Good, <first name>.

Before we begin,
I will tell you how to escape!

If you want to stop
at any time during the lesson,
just type "BYE"
when you see a question mark.

I'll get the message.

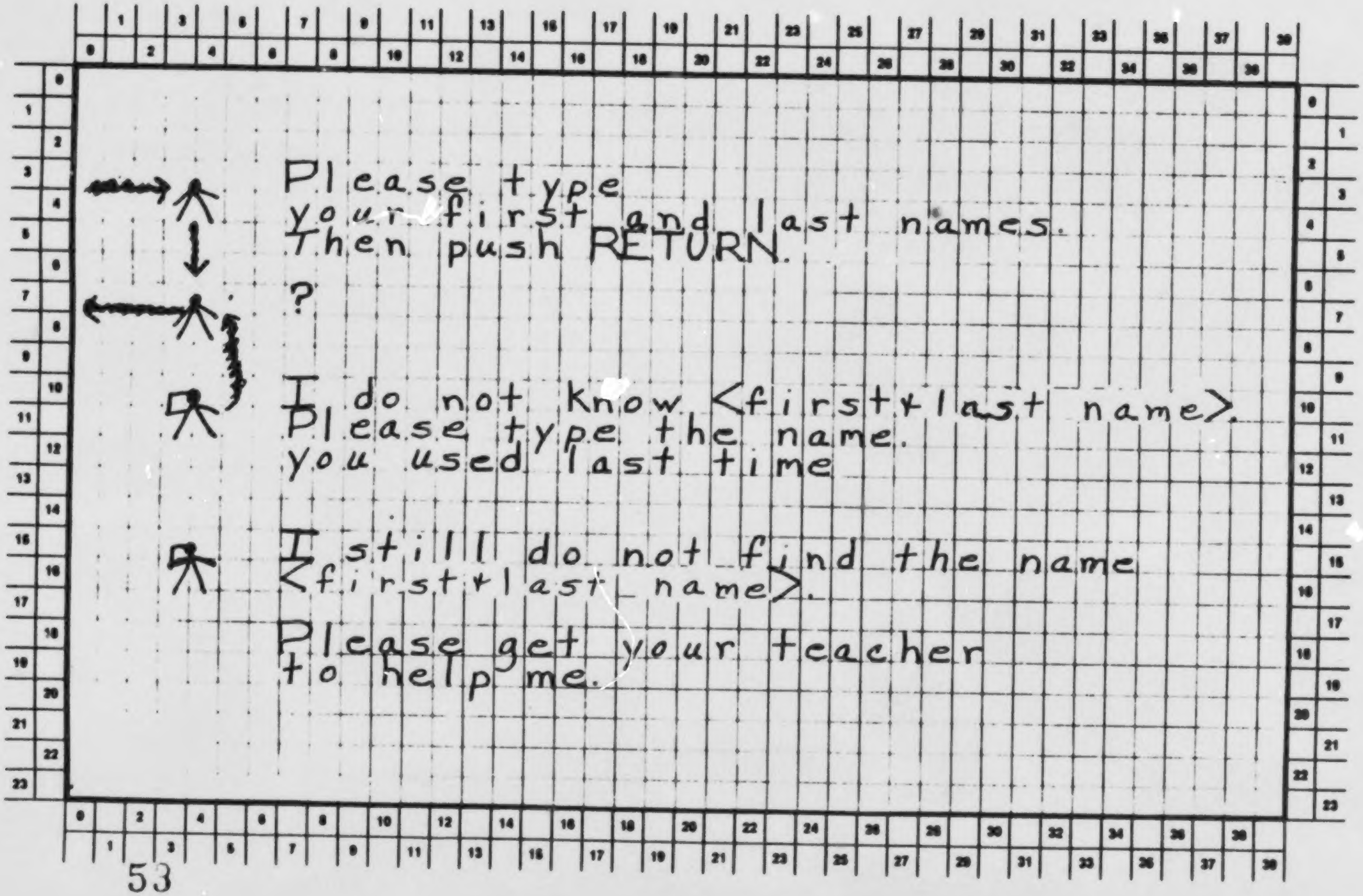
Push RETURN.

COMMENTS

Monkey moves off screen right.

Monkey moves back on screen from left.

SCREEN: Review Procedure - Screen 1



Please type
your first and last names.
Then push RETURN.

?

I do not know <first+last name>.
Please type the name.
you used last time

I still do not find the name
<first+last name>.

Please get your teacher
to help me.

COMMENTS

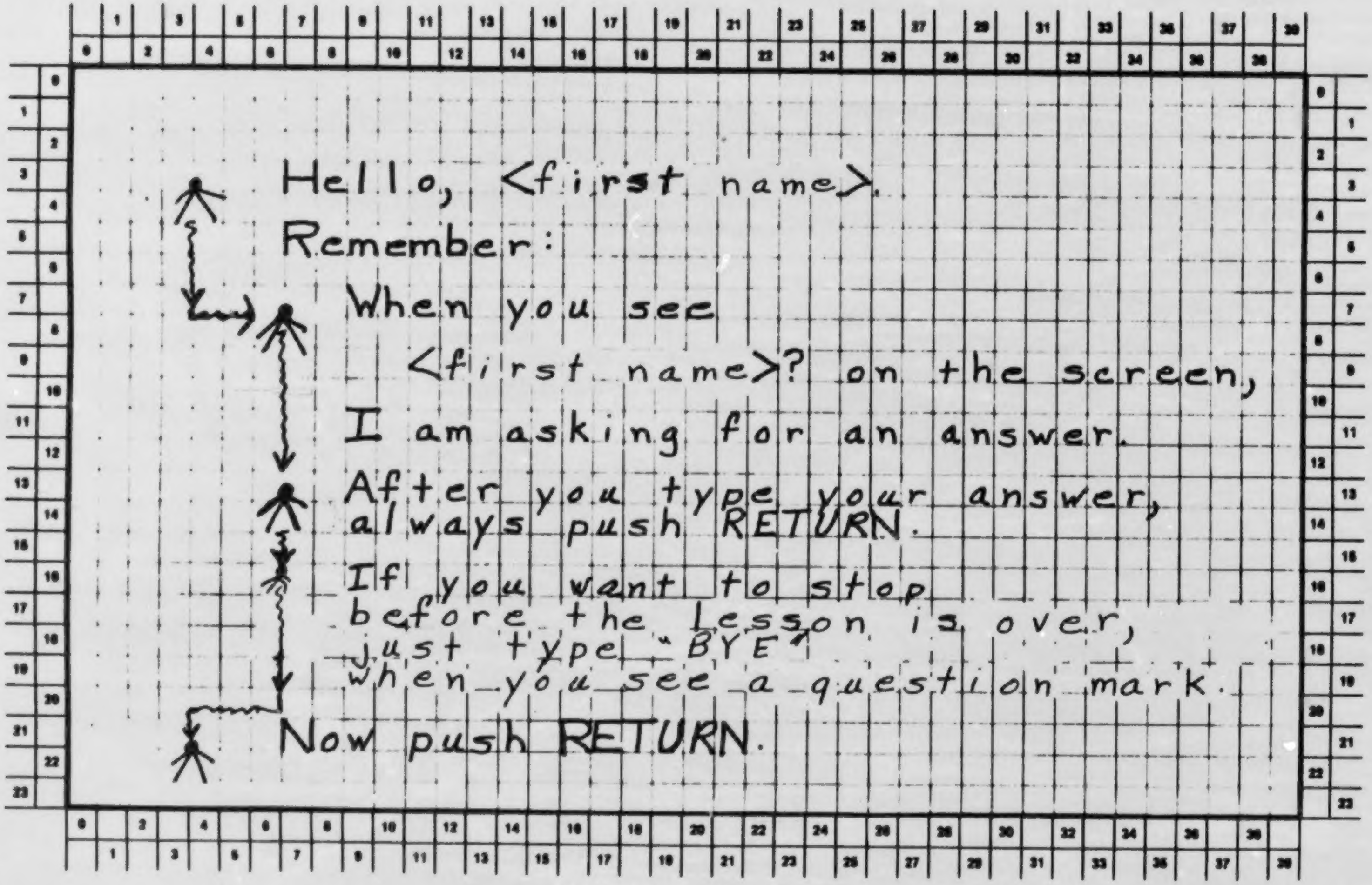
In lines 10-12 and 15-19 monkey is scratching his head.

Student enters name. If name is okay, monkey exits and screen clears.

Lines 10-12 print only if name does not match disk file; monkey moves up.

Lines 15-19 print if revised name still does not match; teacher finds correct student disk and restarts program.

SCREEN: Review Procedure - Screen 2



Hello, <first name>.

Remember:

When you see

<first name>? on the screen,

I am asking for an answer.

After you type your answer,
always push RETURN.

If you want to stop
before the lesson is over,
just type "BYE"
when you see a question mark.

Now push RETURN.

COMMENTS

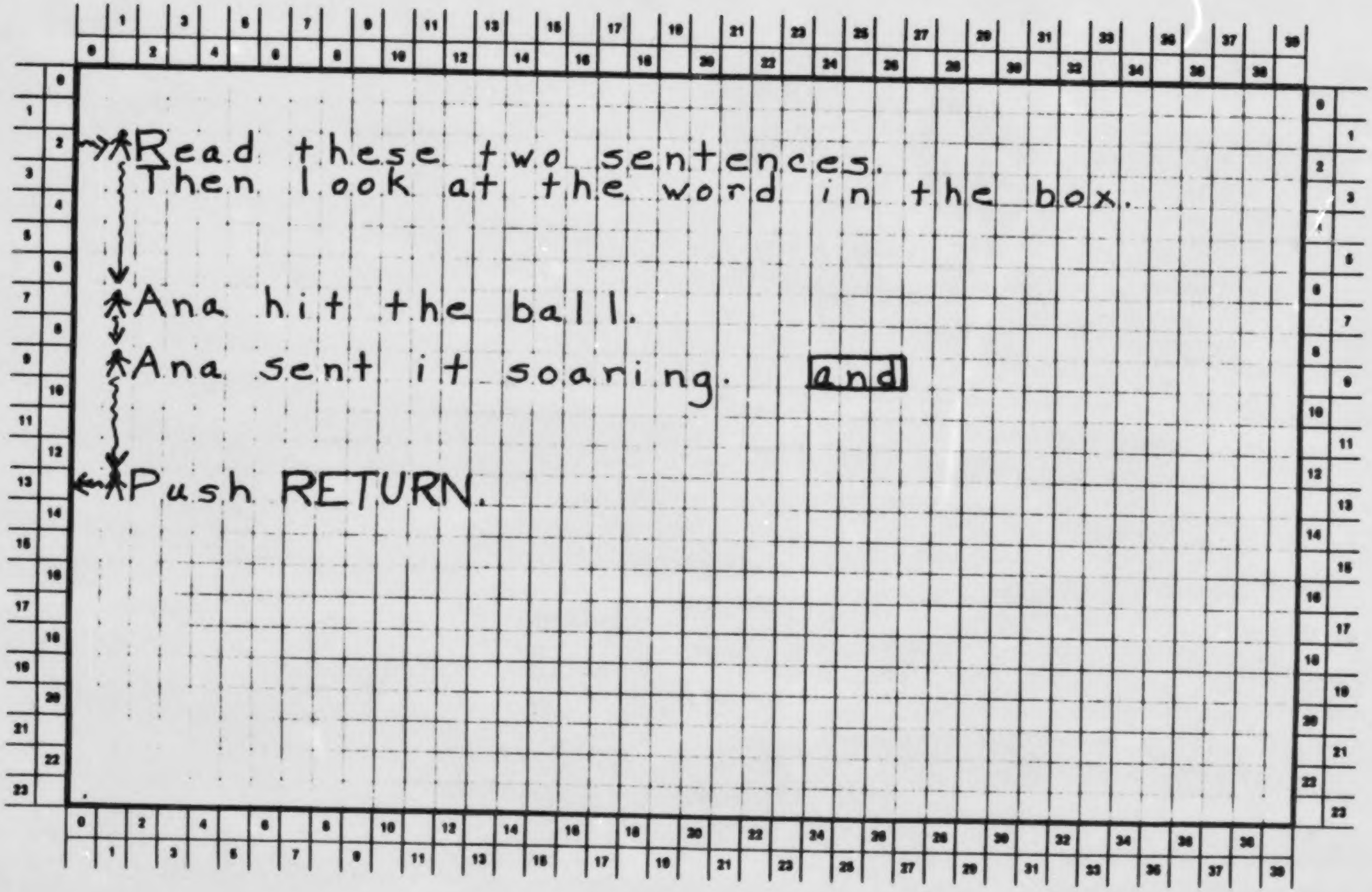
[Delay]

[Delay]

[Delay]

SCREEN: Example Routine - Screen 1

COMMENTS



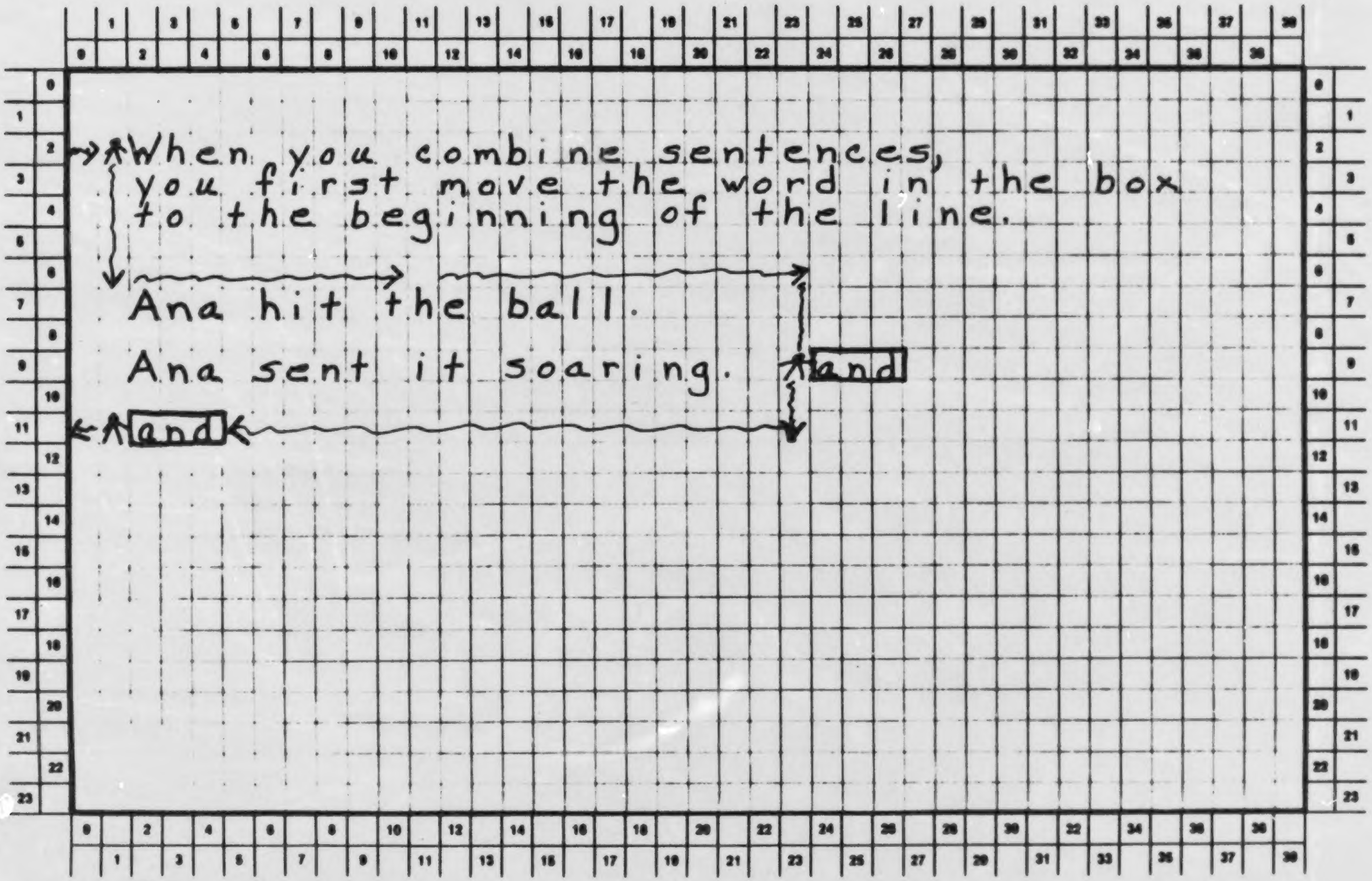
Read these two sentences.
Then look at the word in the box.

Ana hit the ball.

Ana sent it soaring. and

Push RETURN.

SCREEN: Example Routine - Screen 2



When you combine sentences,
you first move the word in the box
to the beginning of the line.

Ana hit the ball.

Ana sent it soaring. and

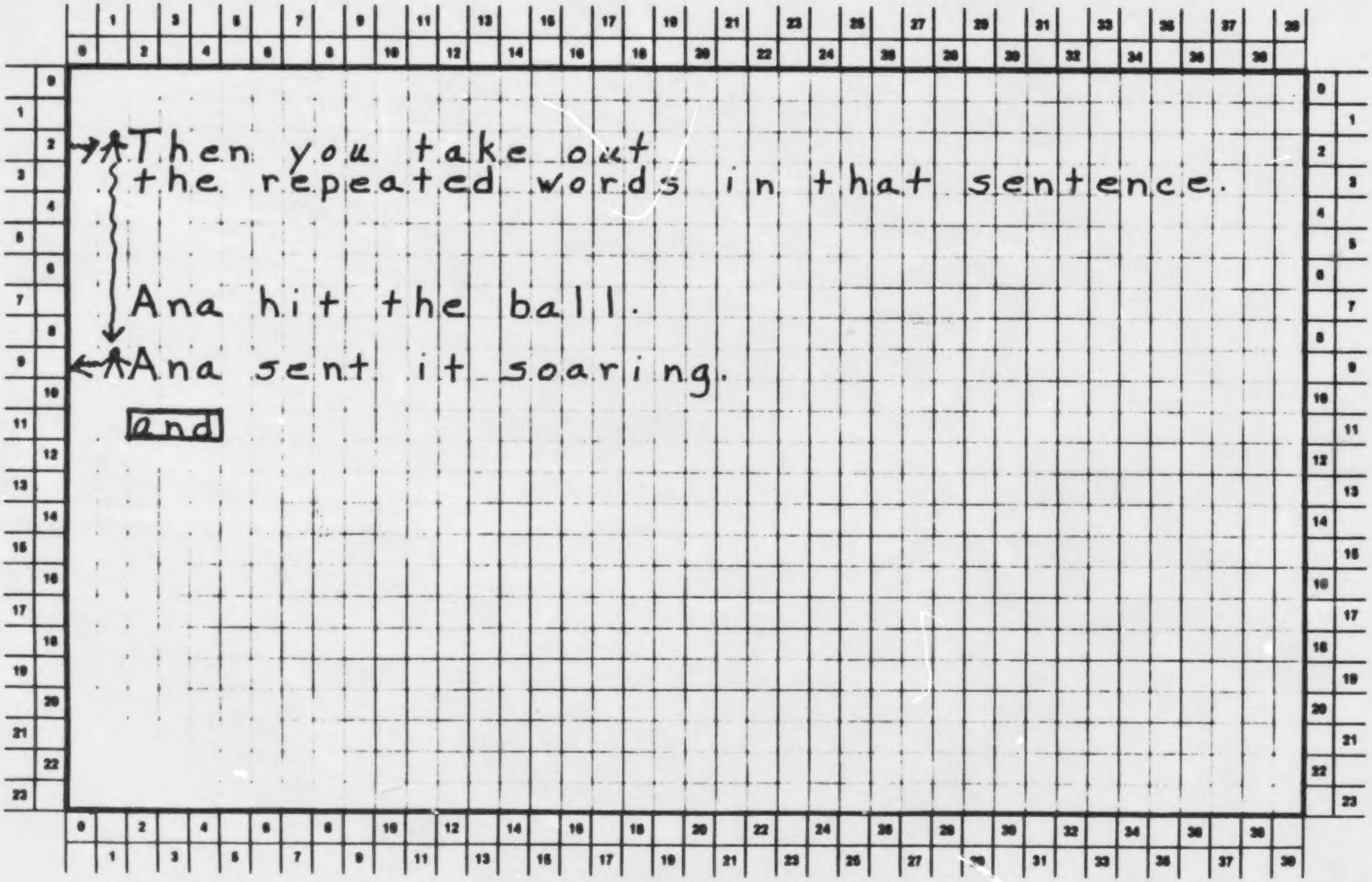
and

COMMENTS

Monkey drags boxed cue to beginning of sentence; monkey then exits left.

[Delay]

SCREEN: Example Routine - Screen 3



Then you take out
the repeated words in that sentence.

Ana hit the ball.

Ana sent it soaring.

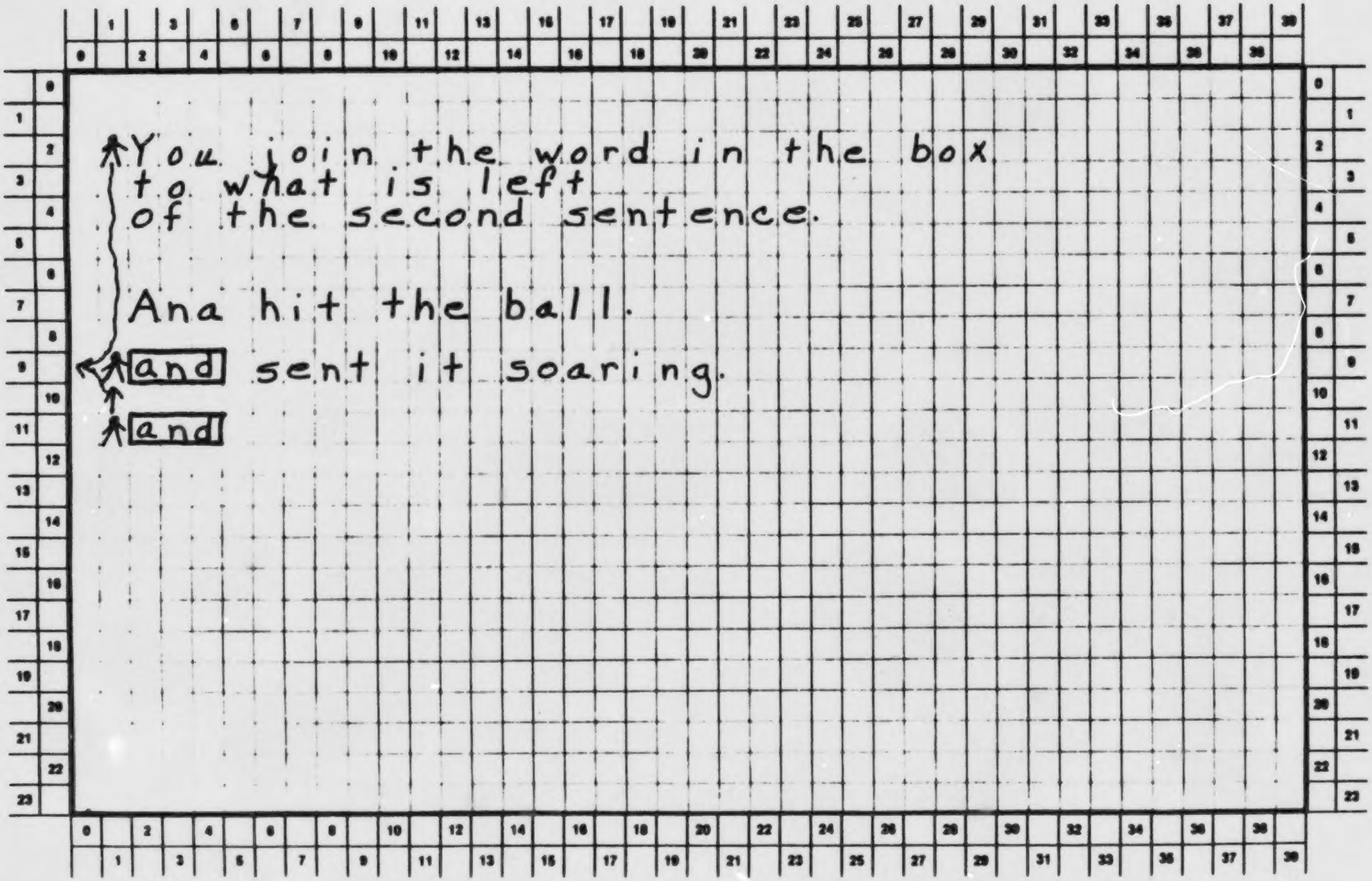
and

COMMENTS

Monkey pulls Ana off screen left.

[Delay]

SCREEN: Example Routine - Screen 4



You join the word in the box
to what is left
of the second sentence.

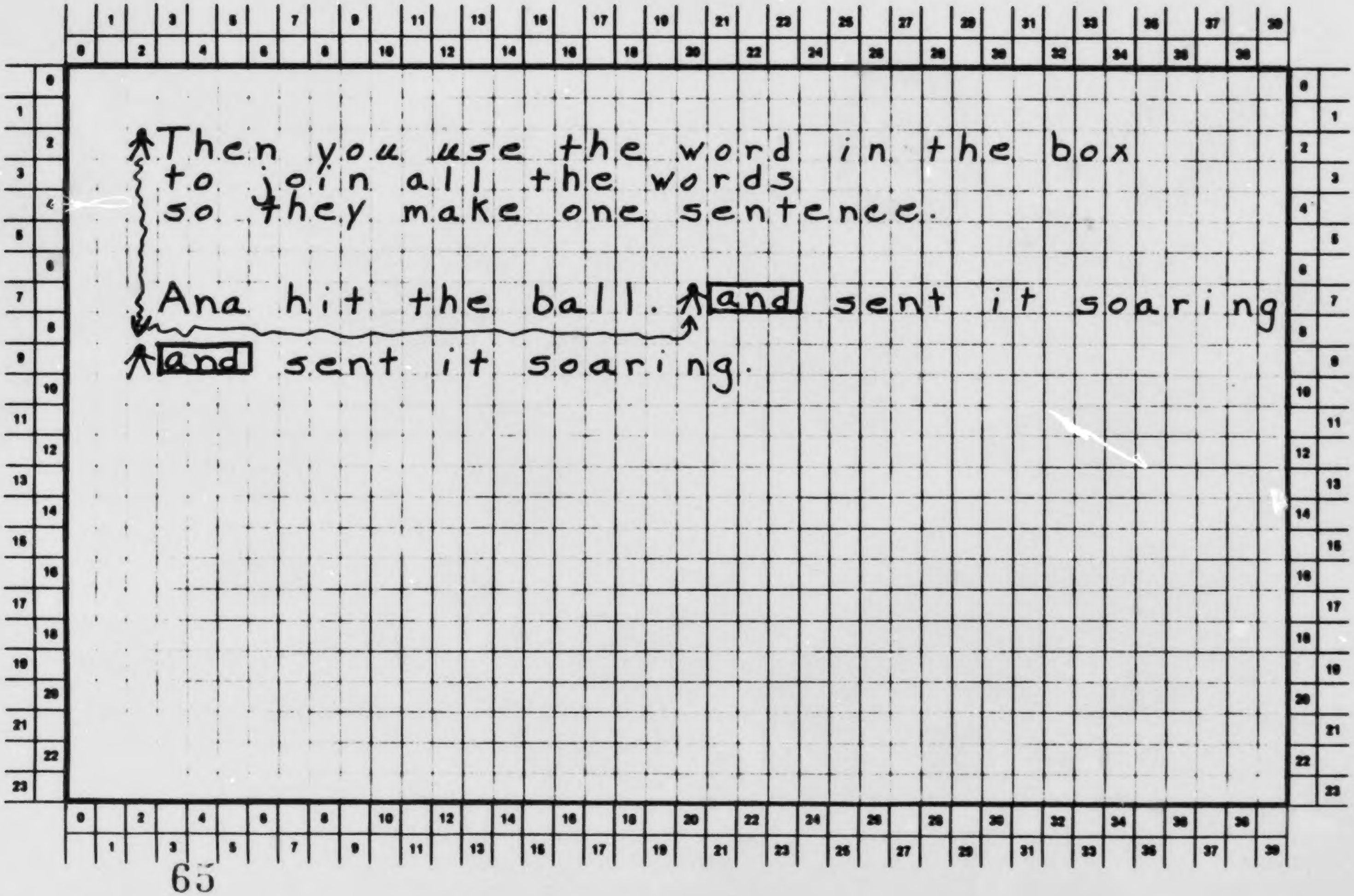
Ana hit the ball.
and sent it soaring.
and

COMMENTS

Monkey pulls boxed cue up to line 9; monkey then exits.

[Delay]

SCREEN: Example Routine - Screen 5



Then you use the word in the box
to join all the words
so they make one sentence.

Ana hit the ball. and sent it soaring

and sent it soaring.

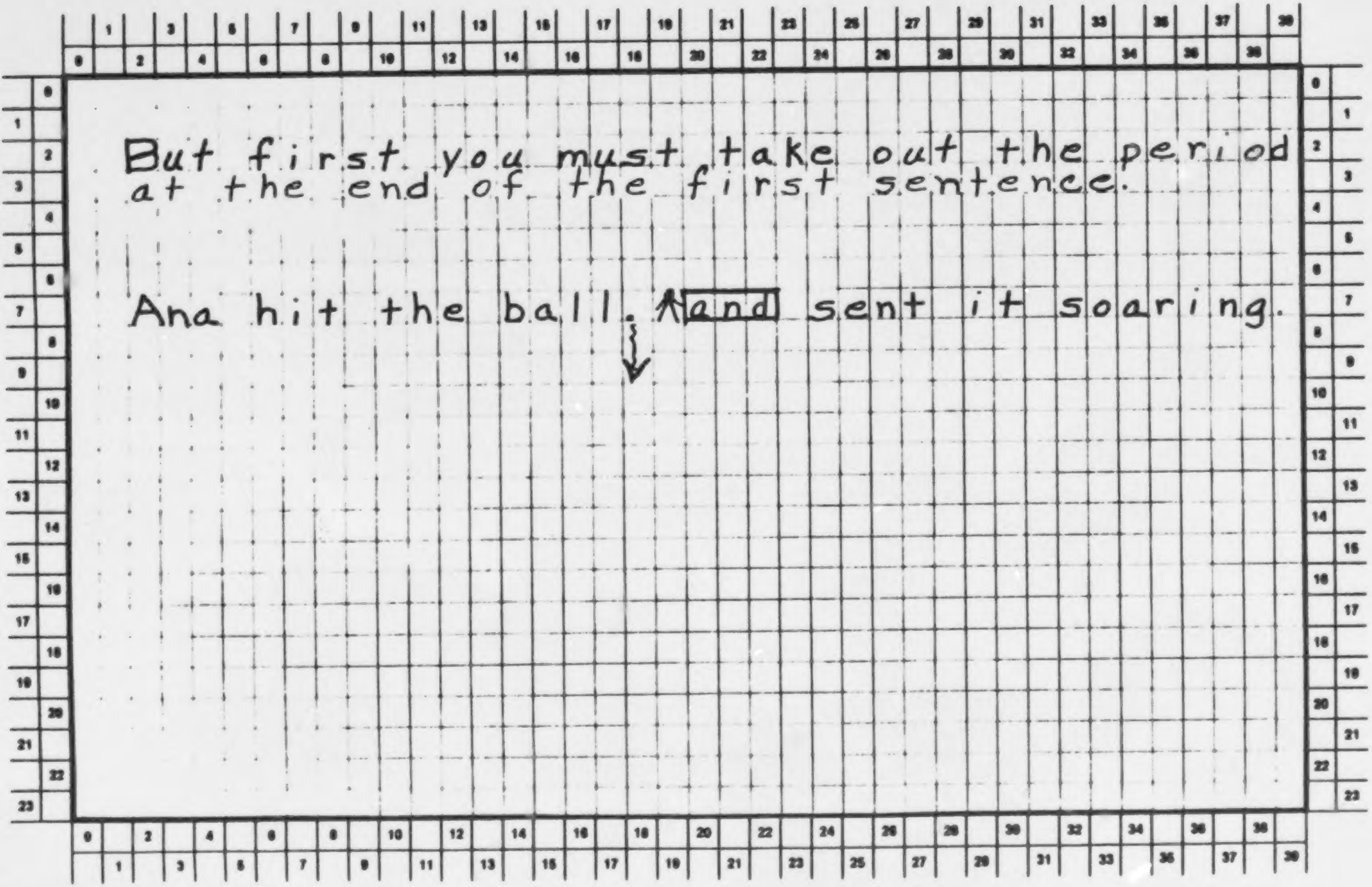
COMMENTS

Monkey pushes words across screen and up to line 7.

[Delay]

Lines 2-4 erase.

SCREEN: Example Routine - Screen 6 (part a)



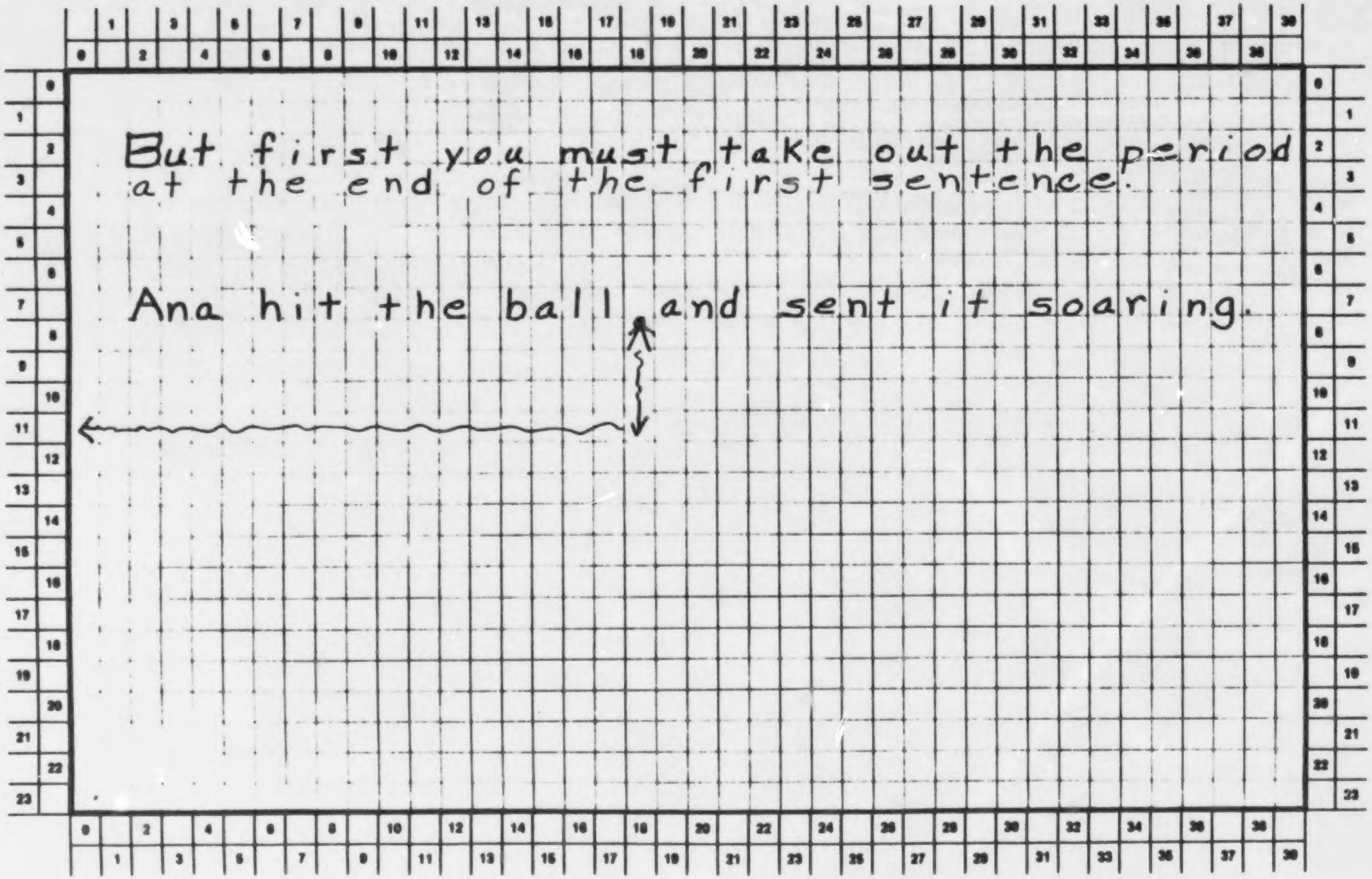
But first you must take out the period at the end of the first sentence.

Ana hit the ball. and sent it soaring.

COMMENTS

Monkey kicks period, which falls out of the sentence and disappears in line 9.

SCREEN: Example Routine - Screen 6 (part b)



But first you must take out the period at the end of the first sentence.

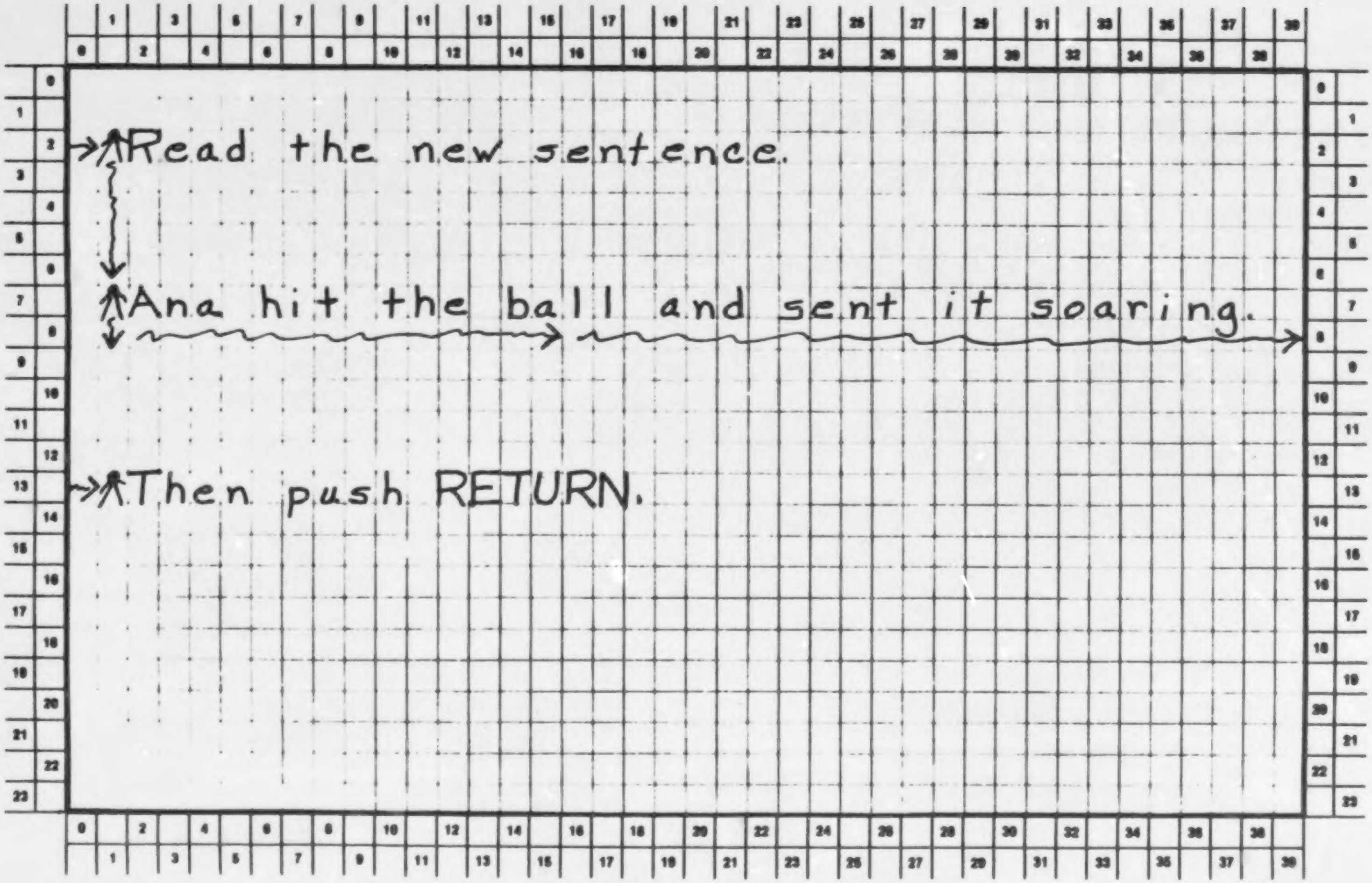
Ana hit the ball and sent it soaring.

COMMENTS

Text same as in 6a.

Box around and disappears; monkey drops down to line 8 and pulls words to left one space; then monkey exits to left.

SCREEN: Example Routine - Screen 7



Read the new sentence.

Ana hit the ball and sent it soaring.

Then push RETURN.

COMMENTS

[Delay]

Monkey then moves down one line and exits to right. [Delay]

Monkey re-enters from left.

SCREEN: Example Routine - Screen 8

COMMENTS

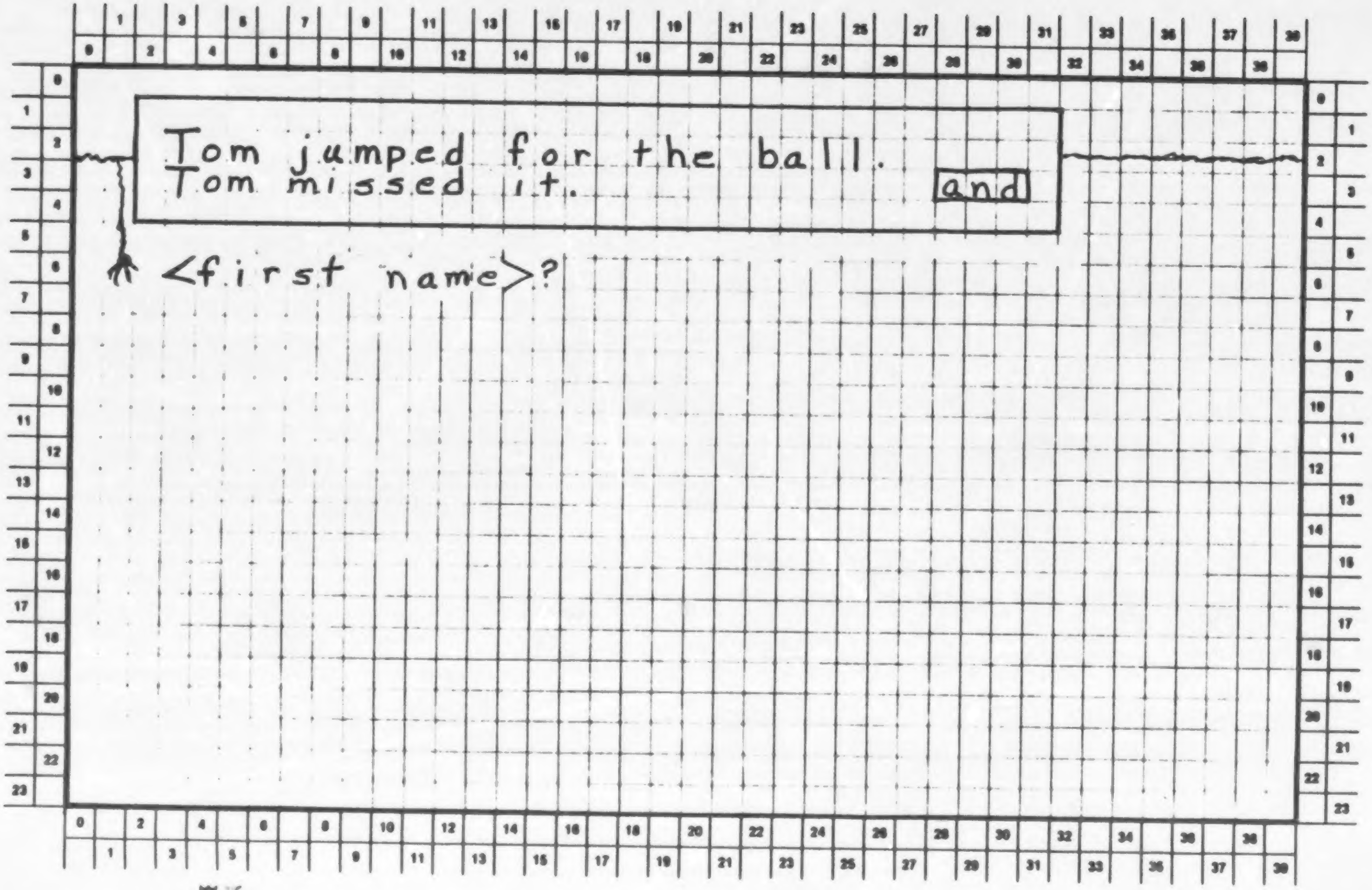
Now you can combine some sentences
yourself.

For each set of sentences,
take the time you need
to type your answer carefully.

Then check
for spelling and typing errors
before you push RETURN.

Now push RETURN to see
the first set of sentences.

SCREEN: Example Routine - Screen 9



Tom jumped for the ball.
Tom missed it. and

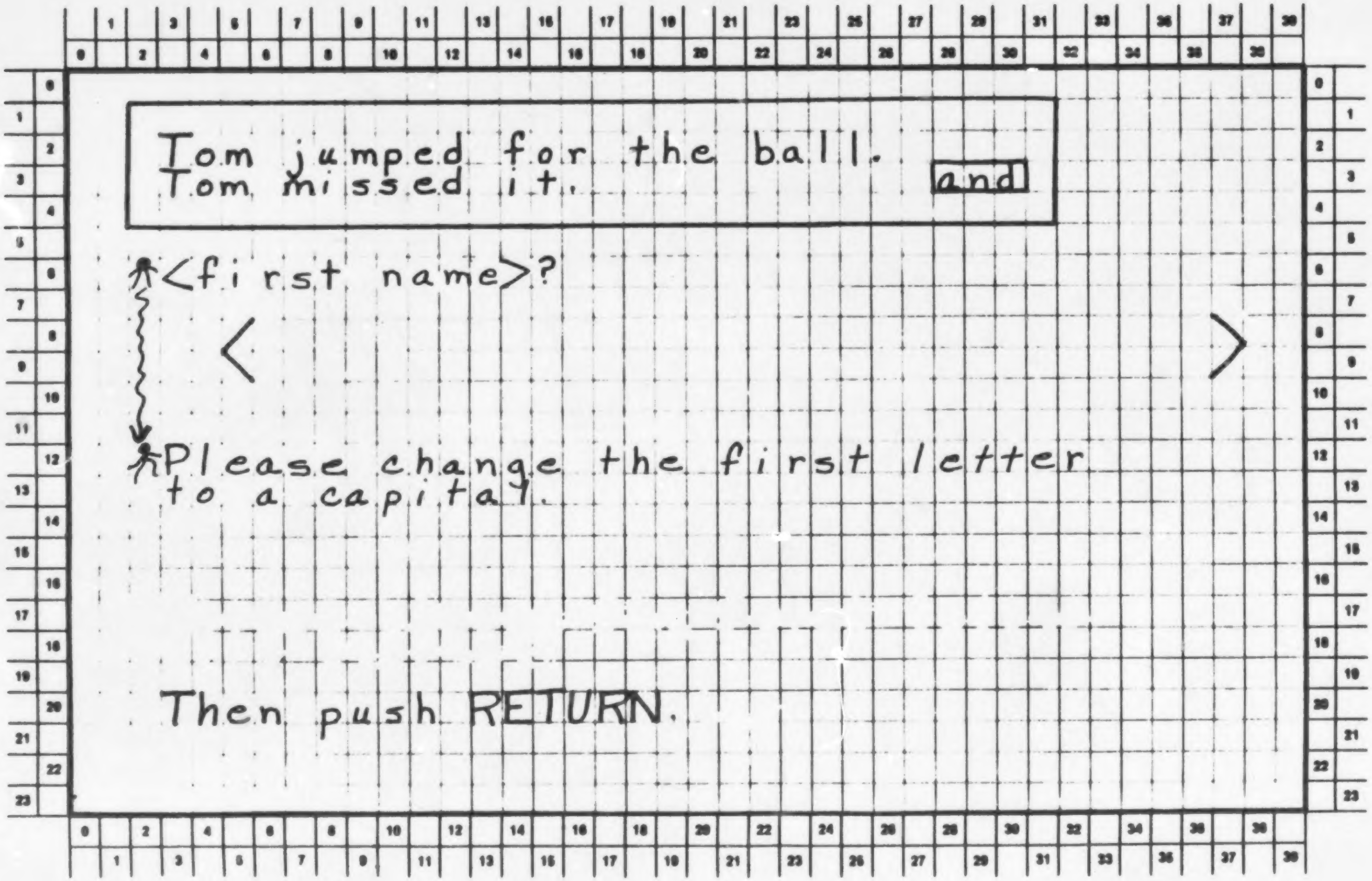
<first name>?

COMMENTS

Monkey pulls item on to screen from the right; then monkey moves down and left to <first name>?

SCREEN: Item Processing Procedure for Practice Items - Screen 1

COMMENTS



Tom jumped for the ball.
Tom missed it. and

<first name>?

< >

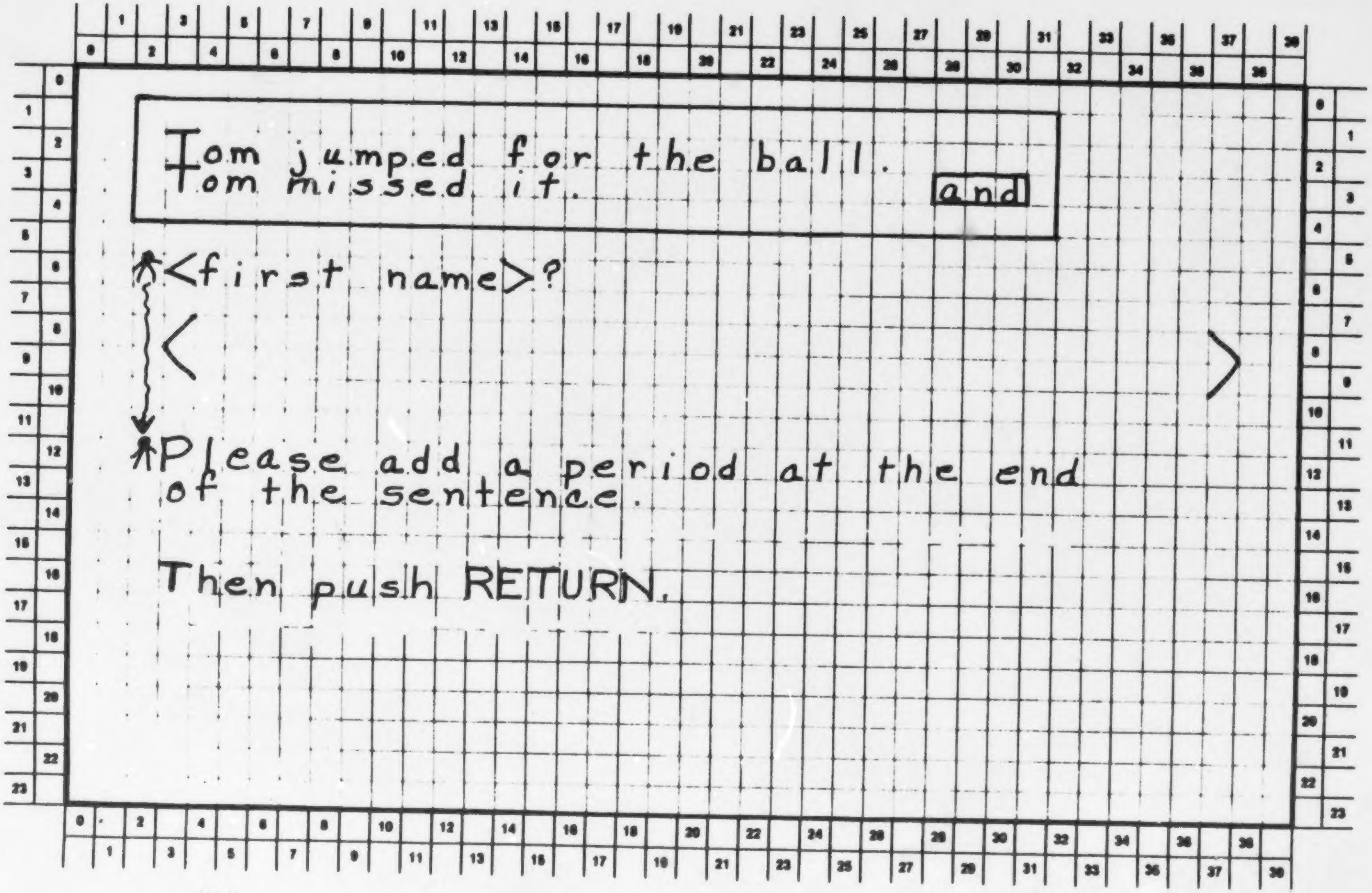
Please change the first letter to a capital.

Then push RETURN.

Stimulus

Response without capital letter.

SCREEN: Item Processing Procedure for Practice Items - Screen 2



Tom jumped for the ball.
Tom missed it. and

<first name>?

< >

Please add a period at the end
of the sentence.

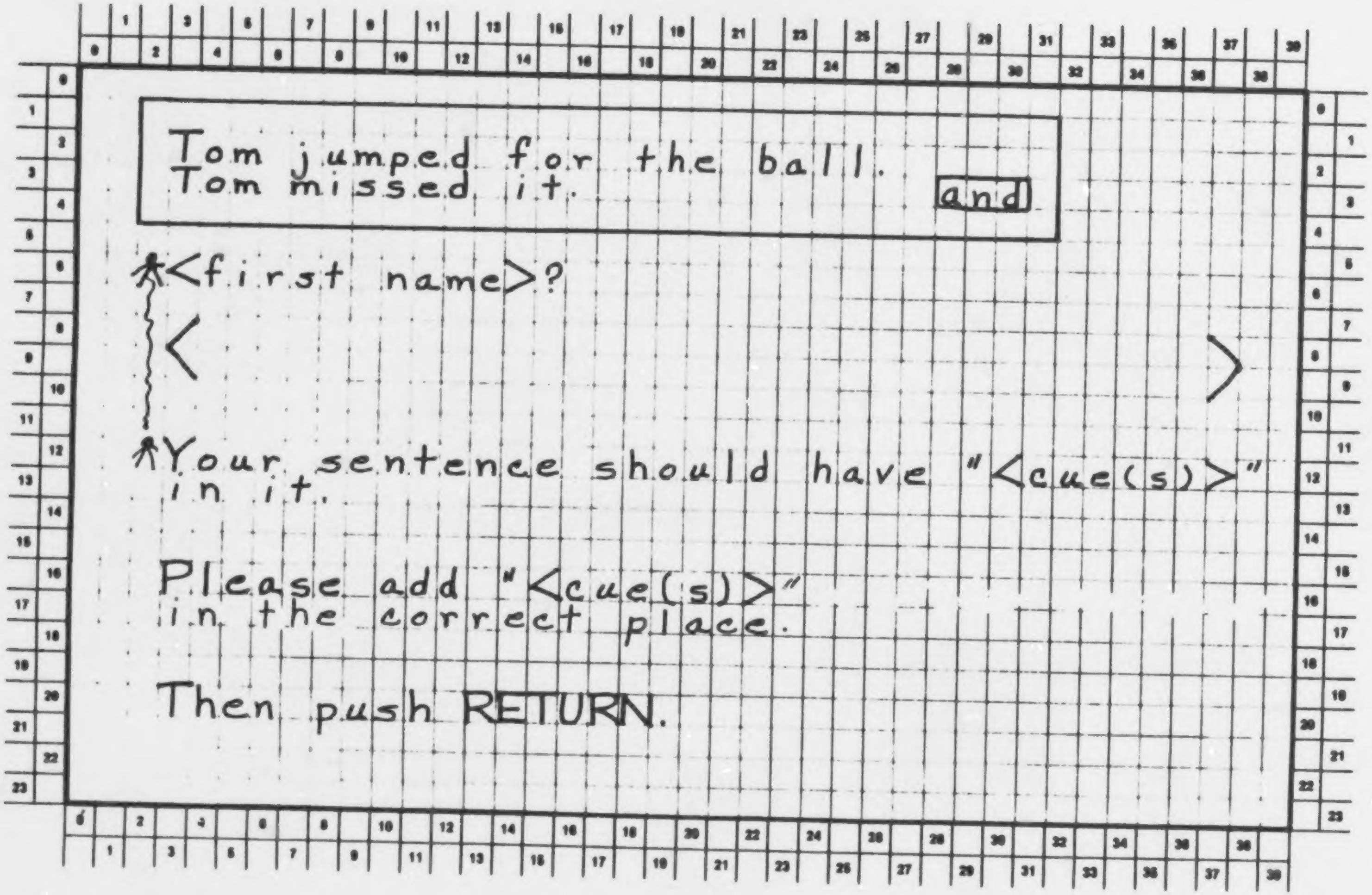
Then push RETURN.

COMMENTS

Stimulus.

Response without period.

SCREEN: Item Processing Procedure for Practice Items - Screen 3



Tom jumped for the ball.
Tom missed it. and

<first name>?

< >

Your sentence should have "<cue(s)>" in it.

Please add "<cue(s)>" in the correct place.

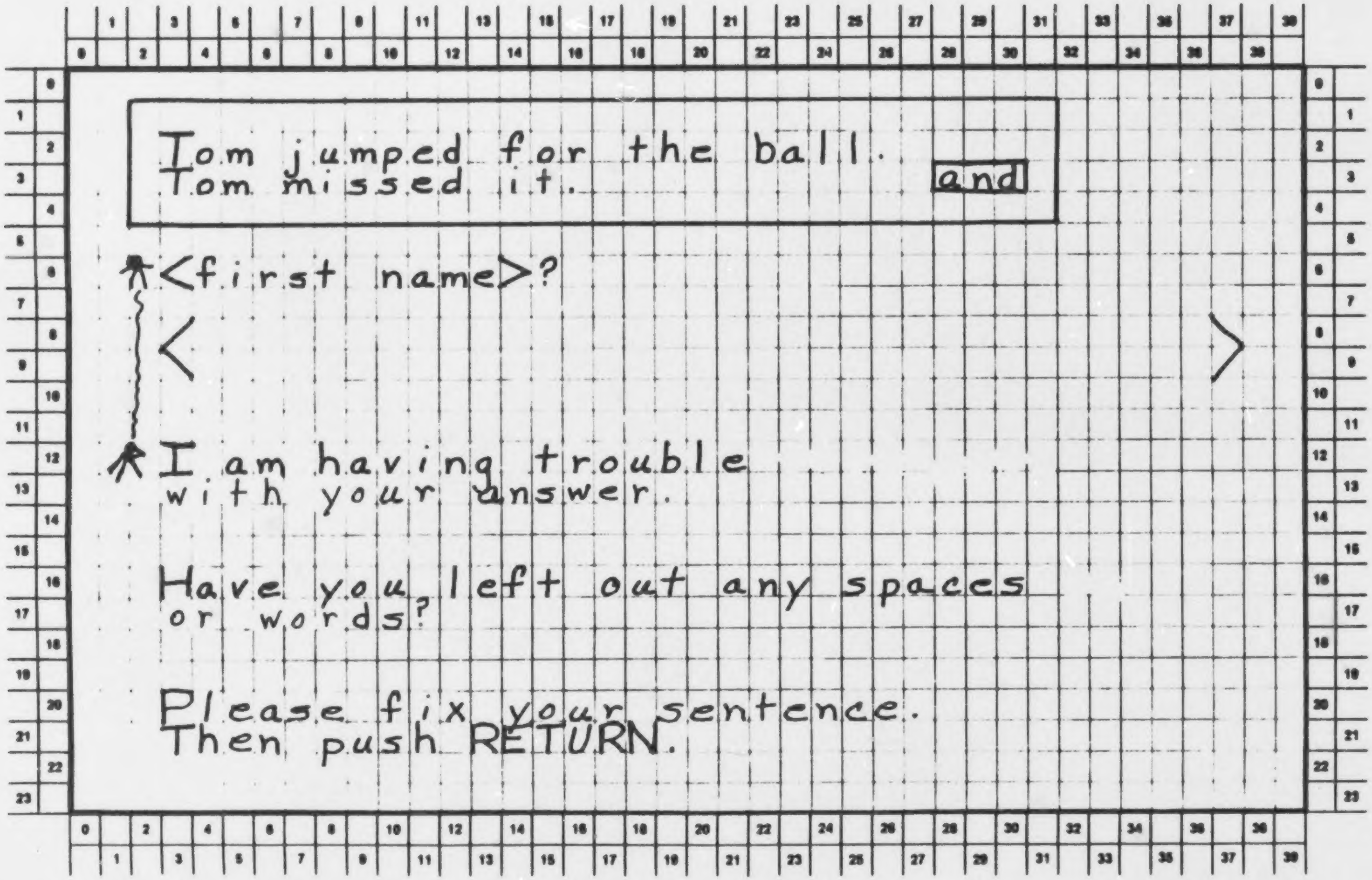
Then push RETURN.

COMMENTS

Stimulus.

Response without cue.

SCREEN: Item Processing Procedure for Practice Items - Screen 4 (part a)



Tom jumped for the ball.
Tom missed it. and

<first name>?

< >

I am having trouble
with your answer.

Have you left out any spaces
or words?

Please fix your sentence.
Then push RETURN.

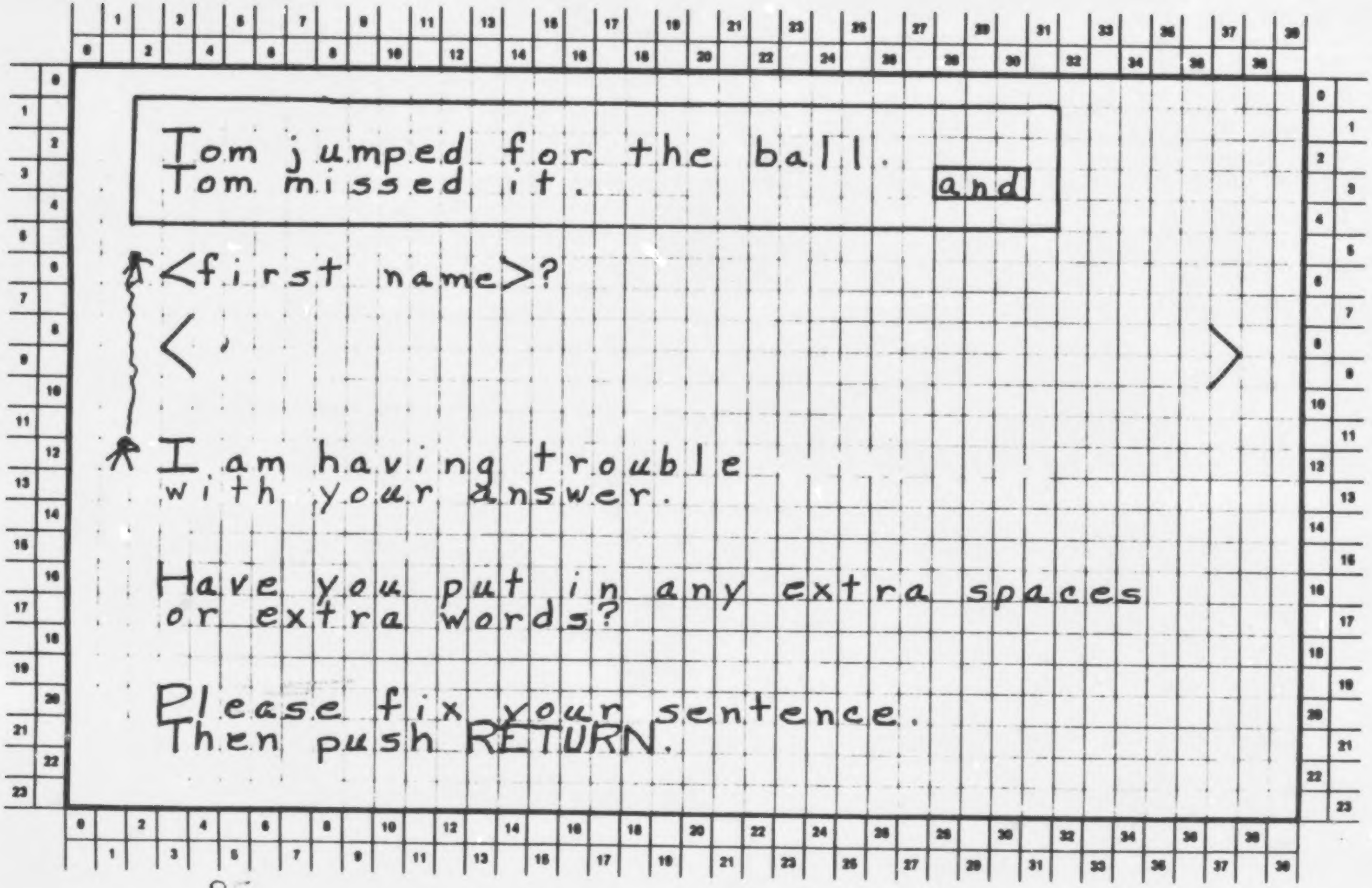
COMMENTS

Stimulus.

Response with too few words.

Monkey scratches head.

SCREEN: Item Processing Procedure for Practice Items - Screen 4 (part b)



Tom jumped for the ball.
Tom missed it. and

<first name>?

< , >

I am having trouble
with your answer.

Have you put in any extra spaces
or extra words?

Please fix your sentence.
Then push RETURN.

COMMENTS

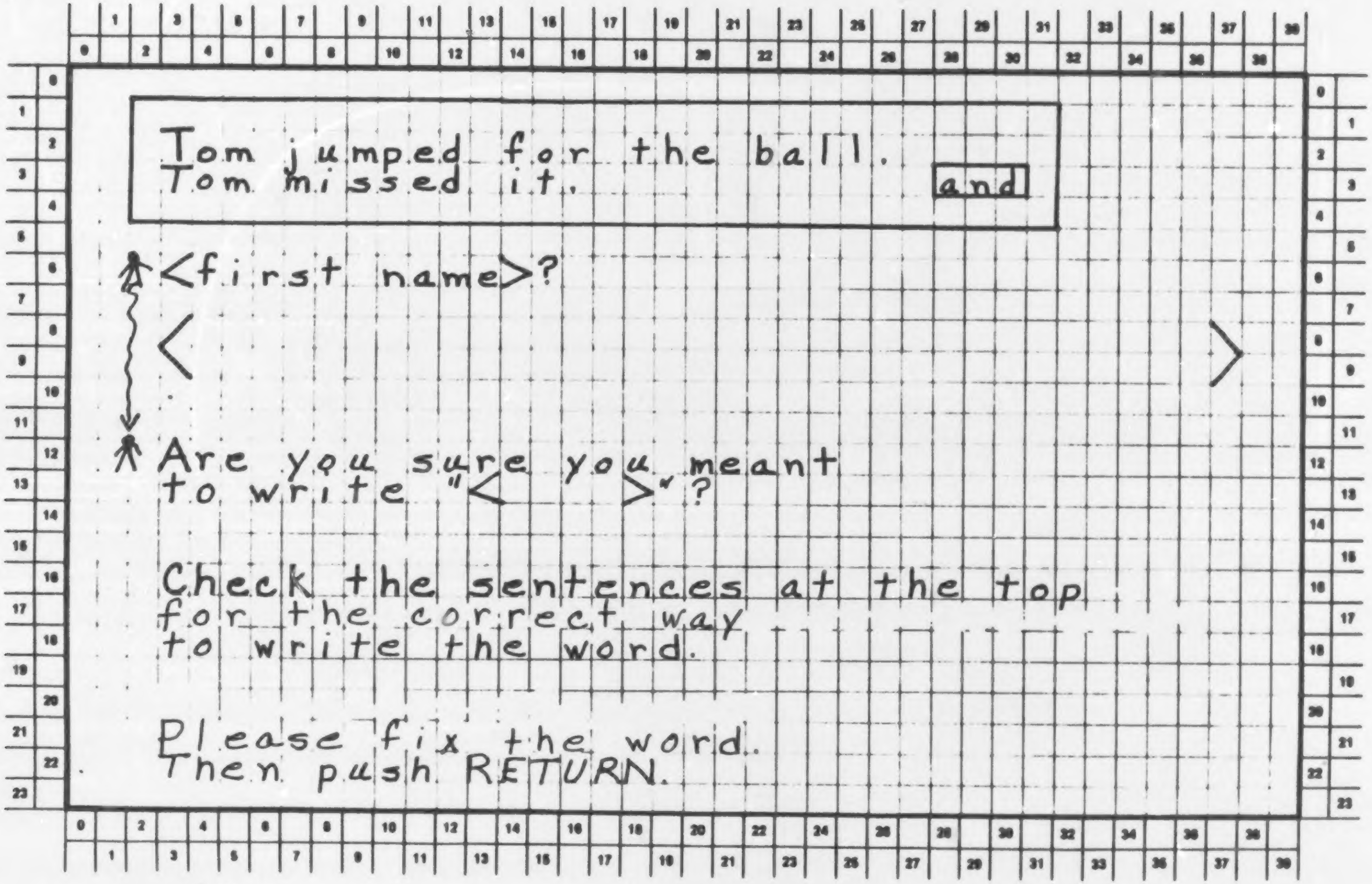
Stimulus.

Response with too many words.

Monkey scratches head.

SCREEN: Item Processing Procedure for Practice Items - Screen 5

COMMENTS



Tom jumped for the ball.
Tom missed it. and

<first name>?

<   >

Are you sure you meant
to write "<   >"?

Check the sentences at the top
for the correct way
to write the word.

Please fix the word.
Then push RETURN.

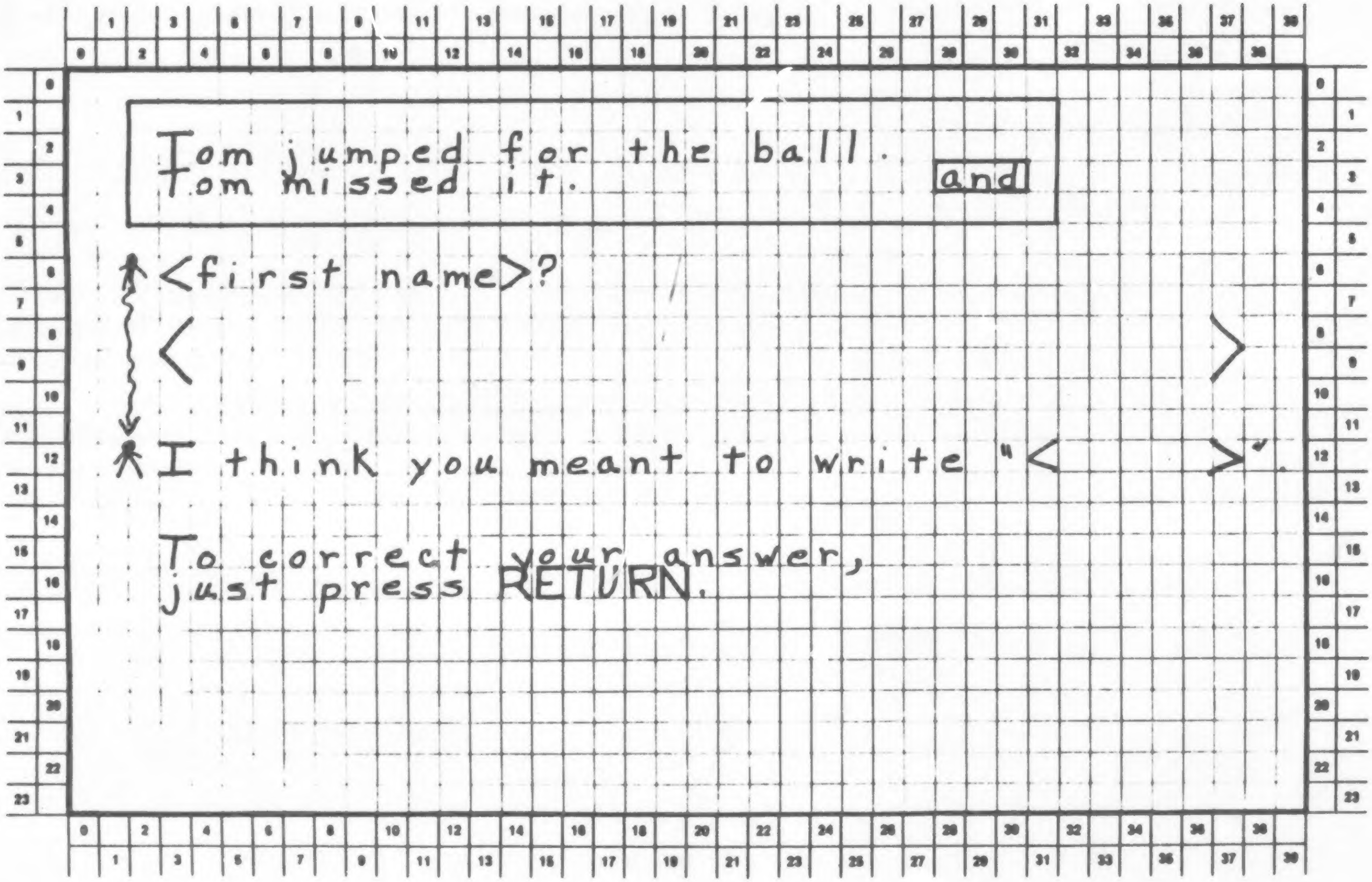
Stimulus.

Response with misspelling.

Cursor moves to mismatched word, which flashes on the screen.

SCREEN: Item Processing Procedure for Practice Items - Screen 5a

COMMENTS



Tom jumped for the ball.
Tom missed it. and

<first name>?

<   >

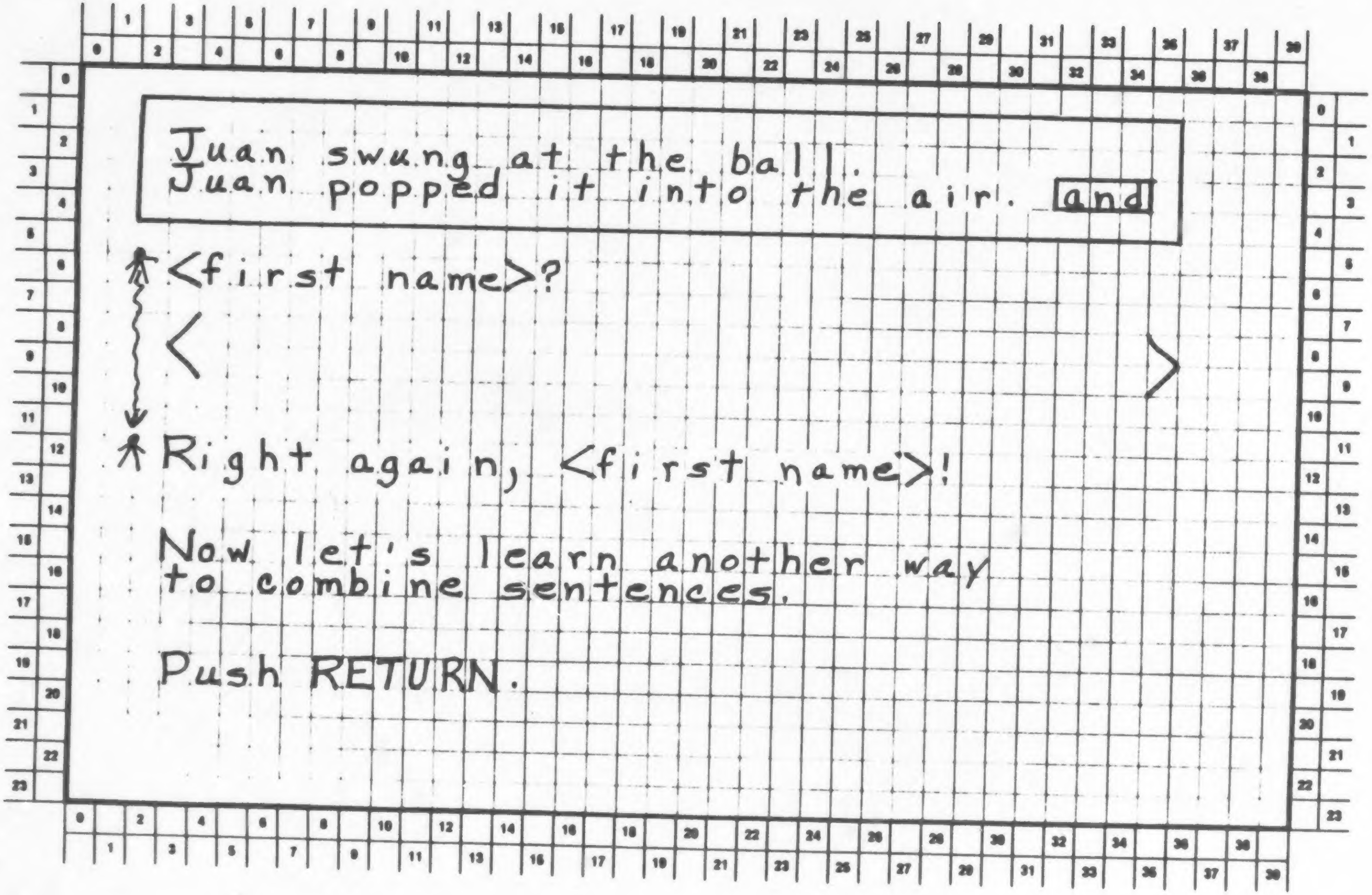
I think you meant to write "<   >".

To correct your answer,
just press RETURN.

Response with uncorrected or miscorrected spelling error.

Computer corrects error in student's response.

SCREEN: Item Processing Procedure for Practice Items - Screen 6 (part a)



Juan swung at the ball.
Juan popped it into the air. and

<first name>?

< >

Right again, <first name>!

Now let's learn another way
to combine sentences.

Push RETURN.

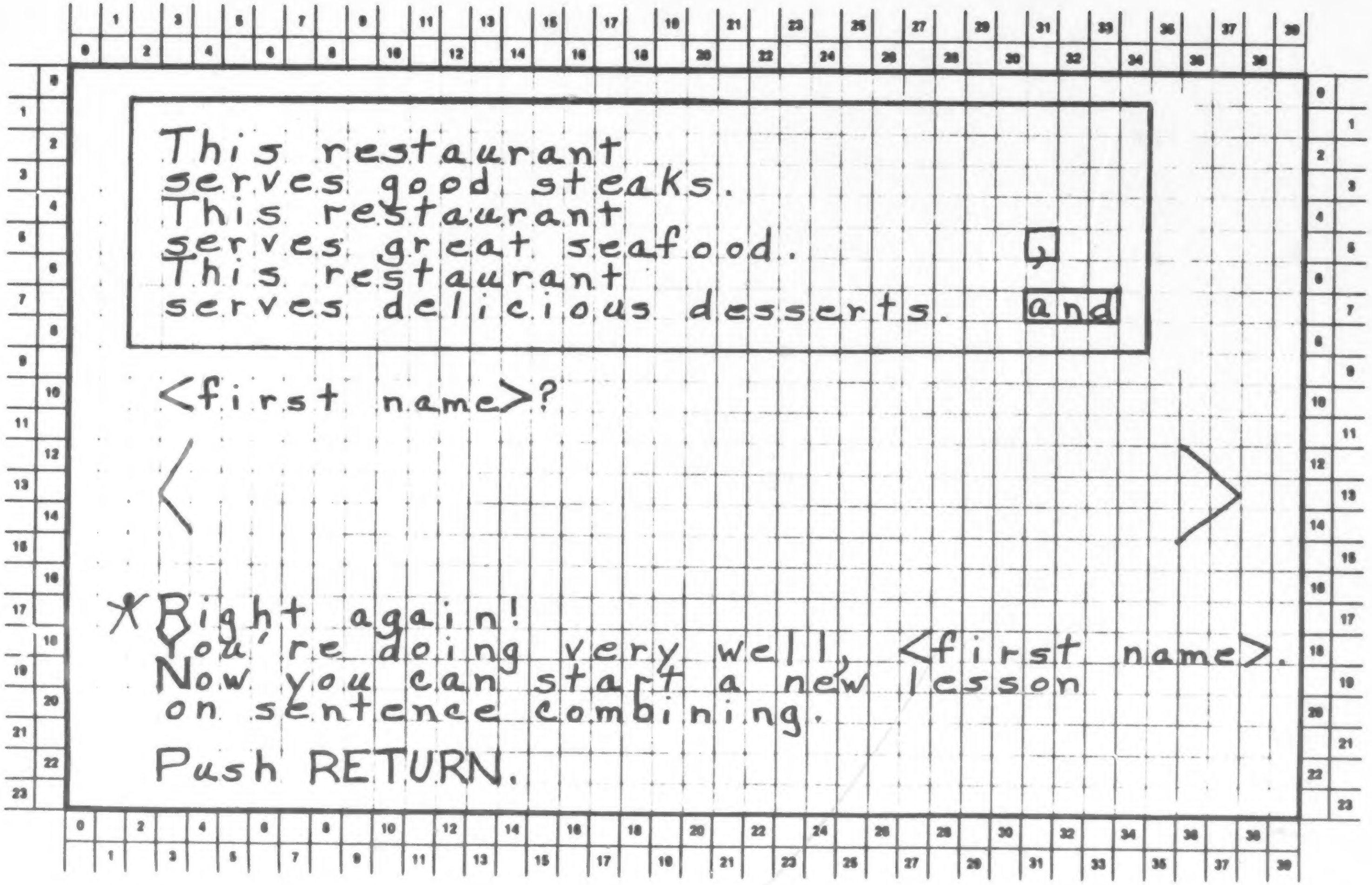
COMMENTS

Stimulus (1:A:3).

Third consecutive
correct response
in Lesson 1.

Monkey jumps up and
down.

SCREEN: Item Processing Procedure for Practice Items - Screen 6 (part b)



This restaurant
serves good steaks.
This restaurant
serves great seafood. ,
This restaurant
serves delicious desserts. and

<first name>?

< >

*Right again!
You're doing very well, <first name>.
Now you can start a new lesson
on sentence combining.

Push RETURN.

COMMENTS

(Stimulus 1:0:9)

Correct response.

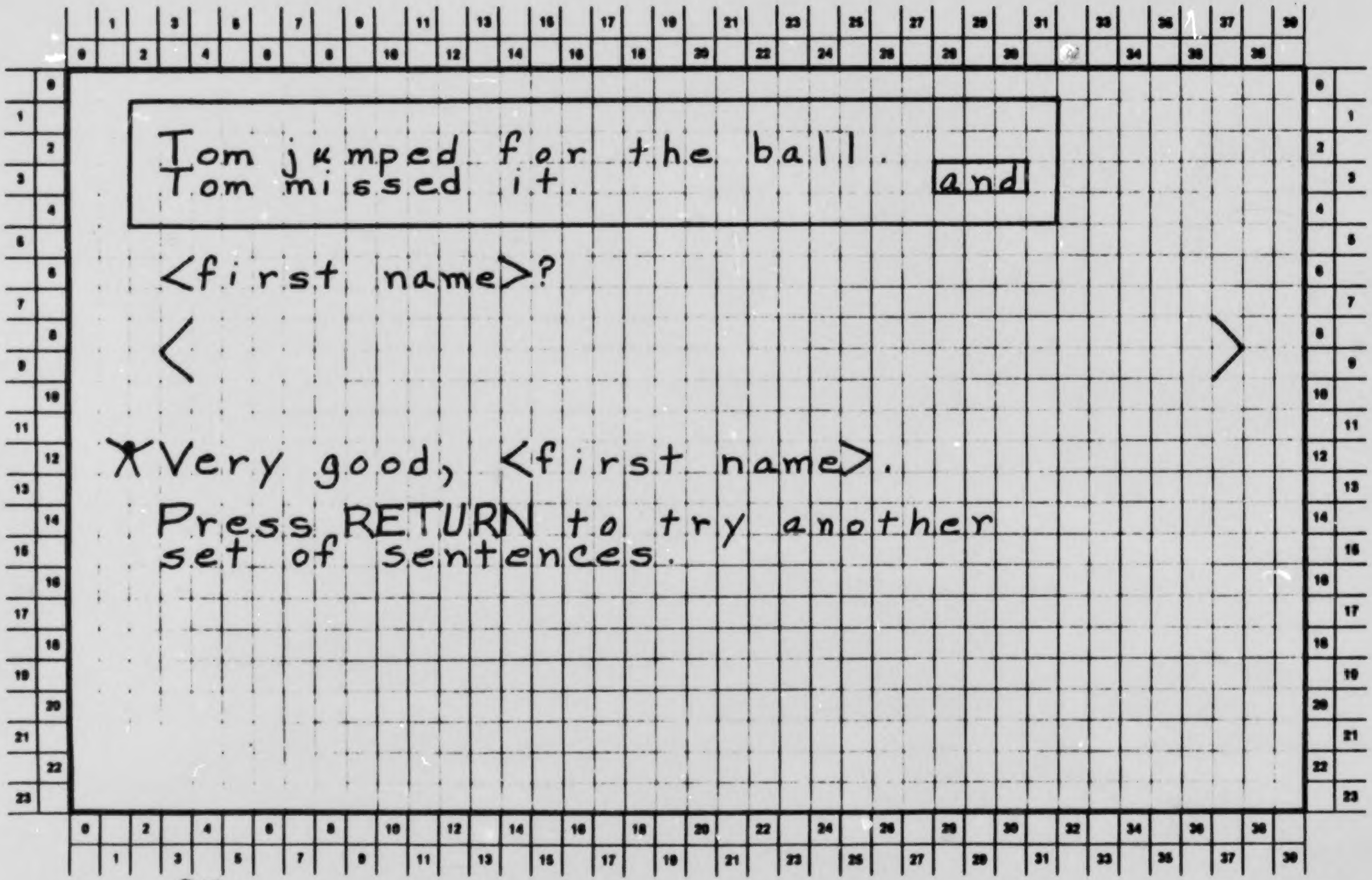
Monkey jumps up and down.

Displayed only if
(1) end of lesson
(2) 3rd correct response and has been on
(3) 10 minutes or less

If more than 10 minutes, the computer terminates.

SCREEN: Progress Routine - Screen 1

COMMENTS



Tom jumped for the ball.
Tom missed it.

and

<first name>?

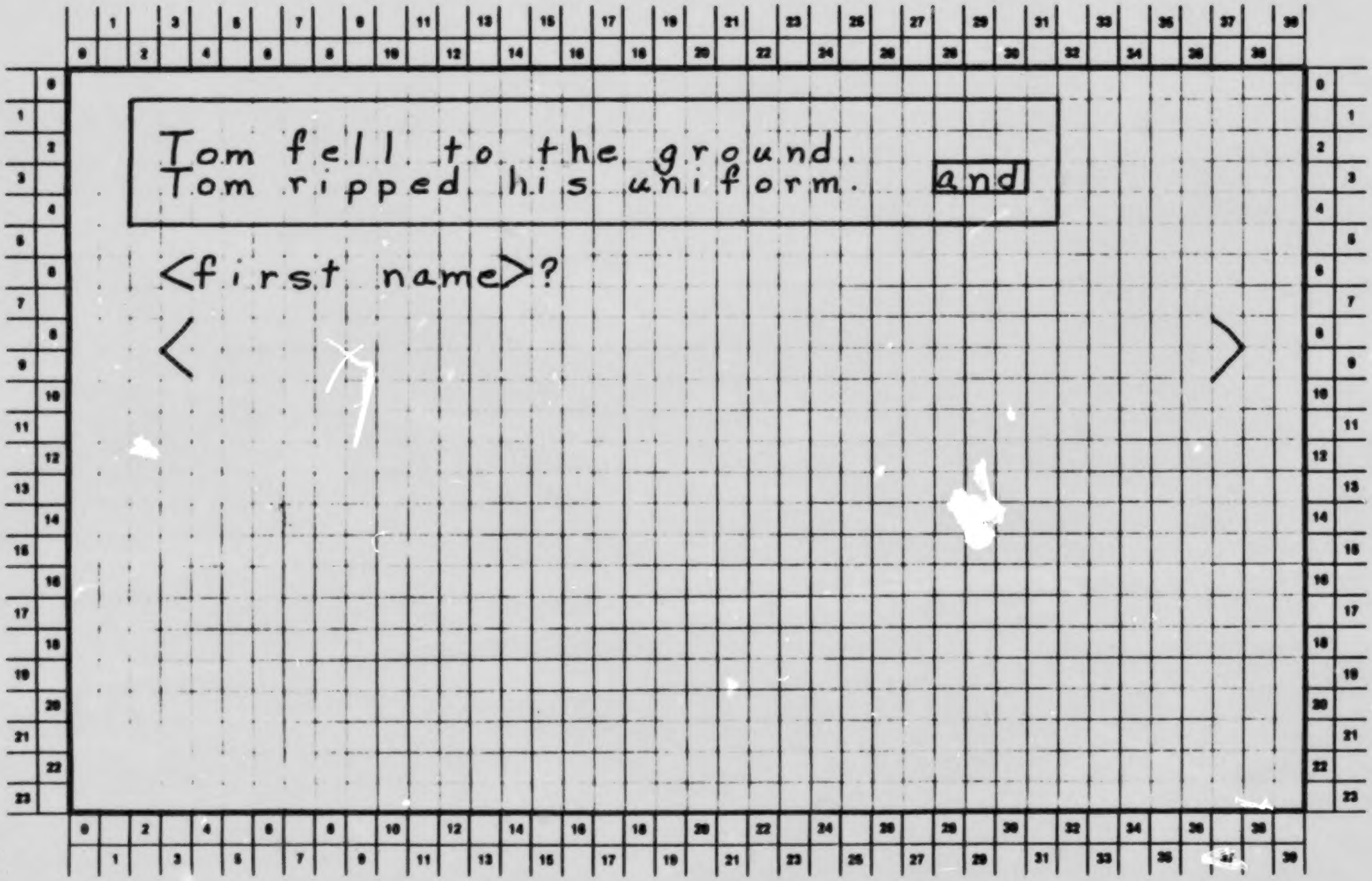
<   >

Very good, <first name>.

Press RETURN to try another set of sentences.

Monkey jumps up and down.

SCREEN: Progress Routine - Screen 2



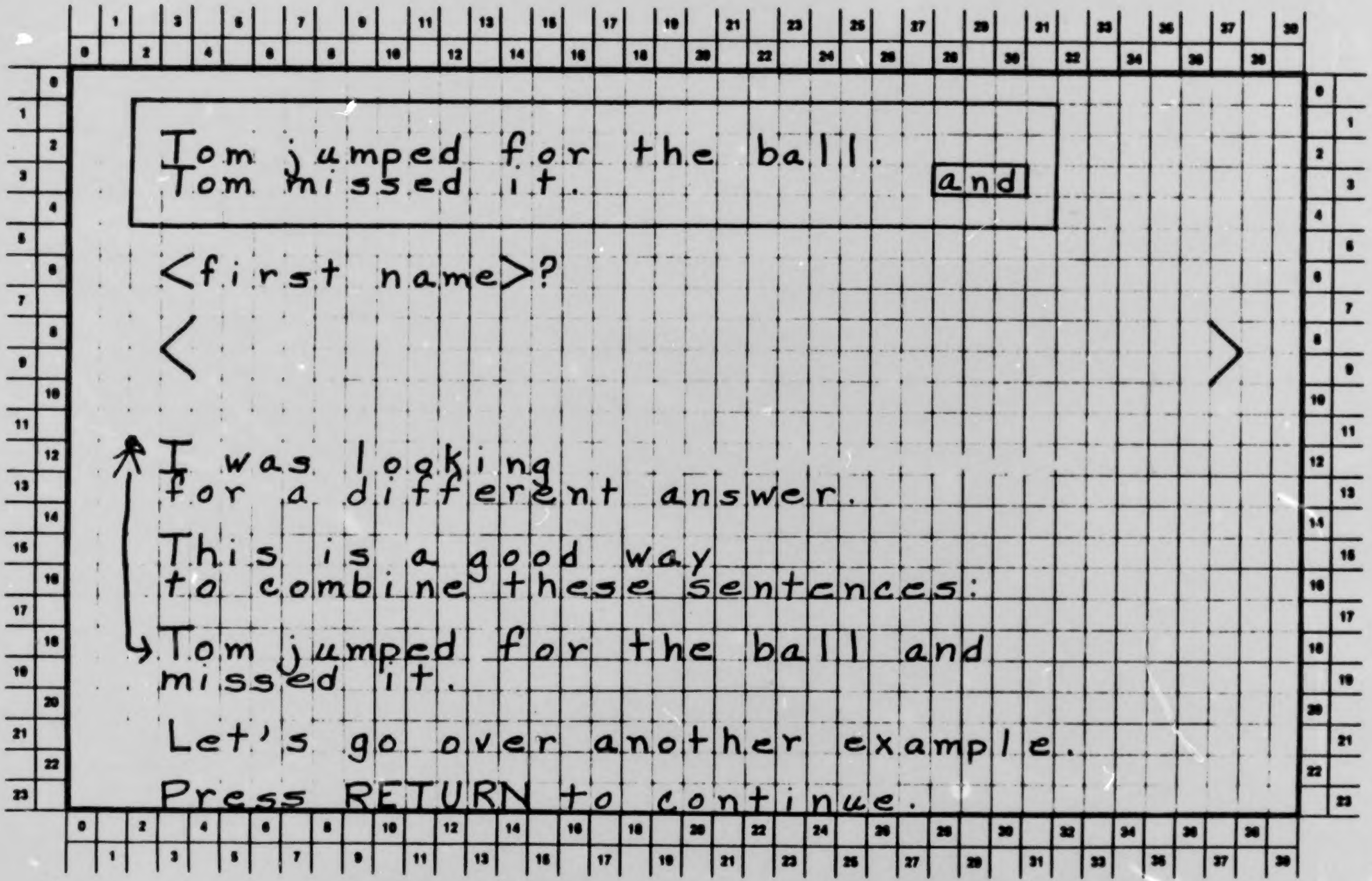
Tom fell to the ground.
Tom ripped his uniform. and

<first name>?

<   >

COMMENTS

SCREEN: Syntax Routine - Screen 1



Tom jumped for the ball.
Tom missed it.

and

<first name>?

<   >

I was looking
for a different answer.

This is a good way
to combine these sentences:

Tom jumped for the ball and
missed it.

Let's go over another example.

Press RETURN to continue.

COMMENTS

Monkey scratches head, then moves down and points to correct answer.

Correct answer flashes several times.

SCREEN: Syntax Routine - Screen 2

COMMENTS

Now I think you are ready
to try again, <first name>.

Press RETURN to try another set
of sentences.

SCREEN: Syntax Routine - Screen 3

That is enough for now.

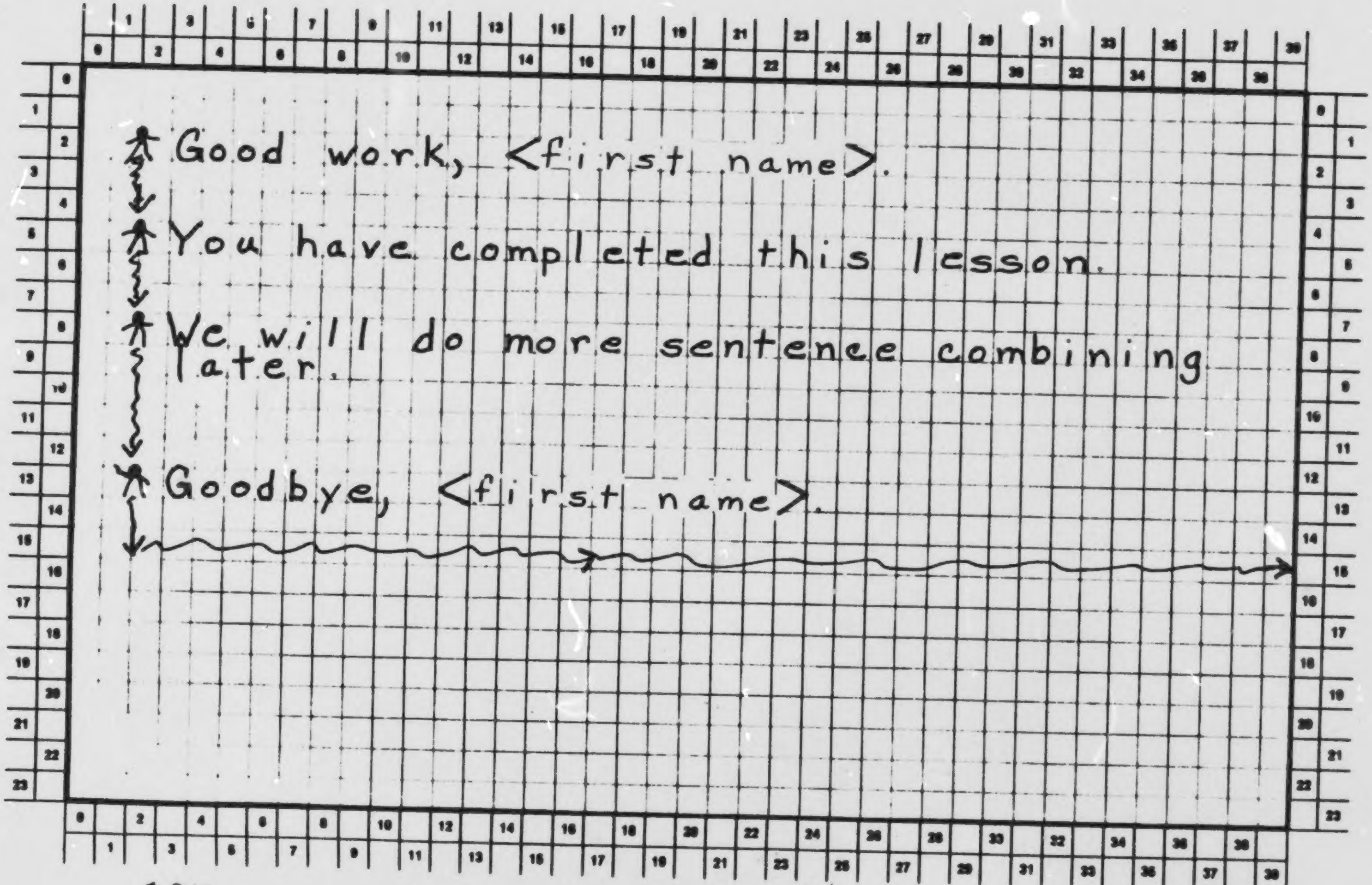
We will work on this again later.

*Goodbye, <first name>.

COMMENTS

Monkey waves good-bye.

SCREEN: Termination Routine - Screen 1



Good work, <first name>.

You have completed this lesson.

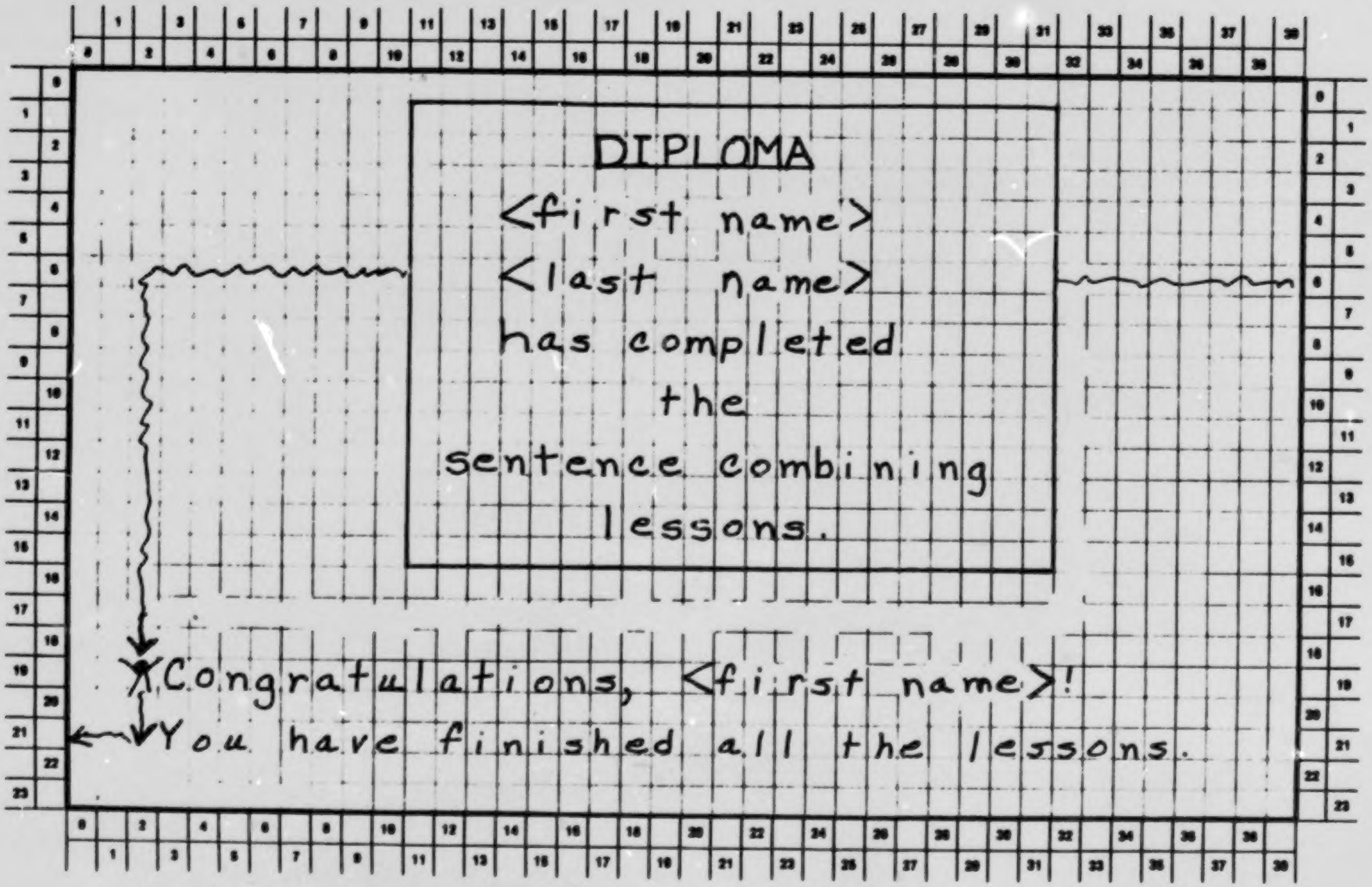
We will do more sentence combining later.

Goodbye, <first name>.

COMMENTS

Monkey waves, and then moves off screen right.

SCREEN: Termination Routine - Screen 2



DIPLOMA

<first name>

<last name>

has completed

the

sentence combining

lessons.

Congratulations, <first name>!

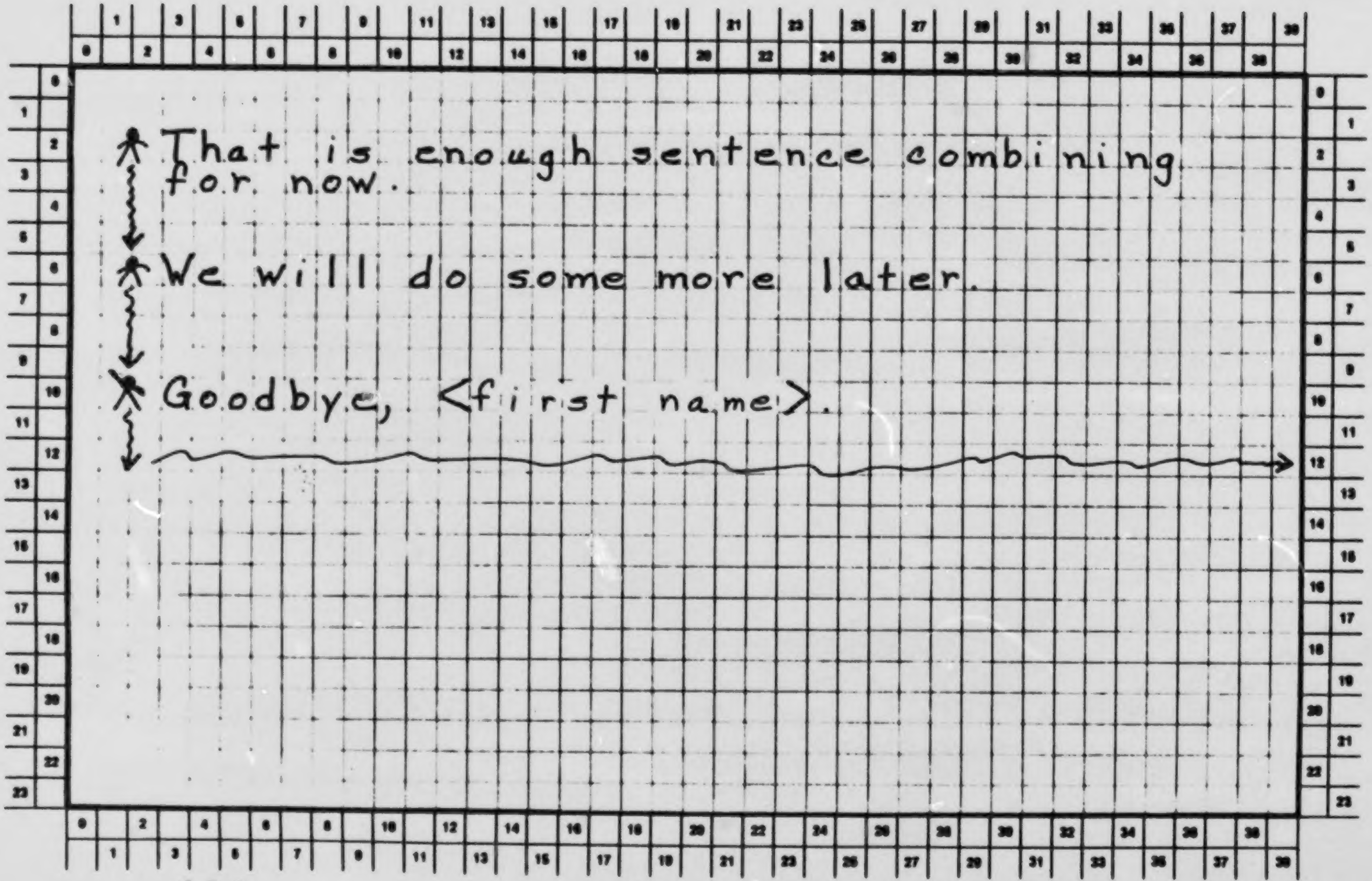
You have finished all the lessons.

COMMENTS

Monkey pulls diploma on screen from right; student's first and last names are centered.

Computer "beeps" three times; monkey moves down and exits left.

SCREEN: Termination Routine - Screen 3



That is enough sentence combining for now.

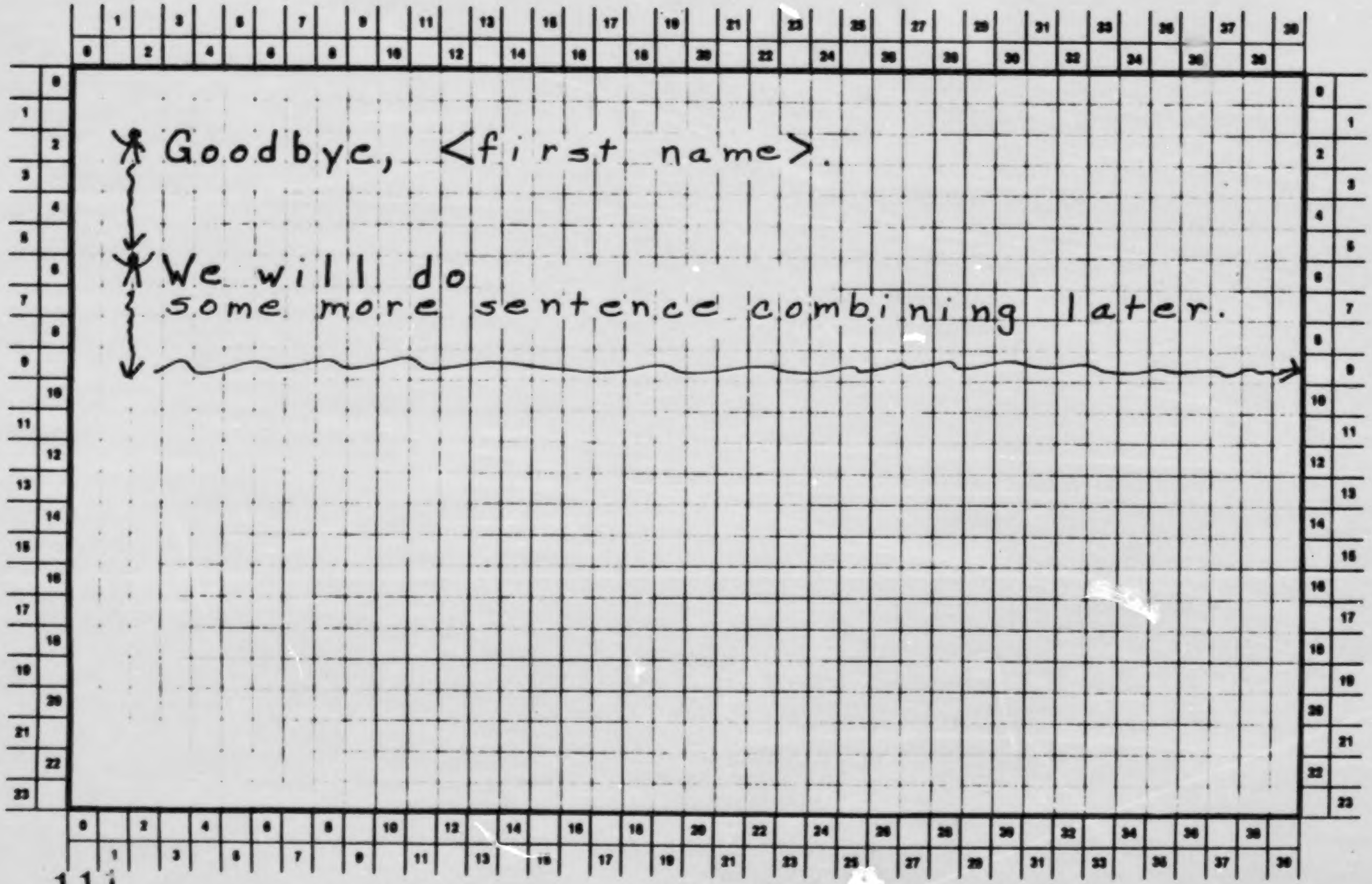
We will do some more later.

Goodbye, <first name>.

COMMENTS

In line 10, monkey waves.

SCREEN: Termination Routine - Screen 4



Goodbye, <first name>.

We will do some more sentence combining later.

COMMENTS

Monkey is waving.

SCREEN: Termination Routine - Screen 5 (part a)

COMMENTS

Tom jumped for the ball.
Tom missed it. and

Practice item fits here.

<first name>?

< >

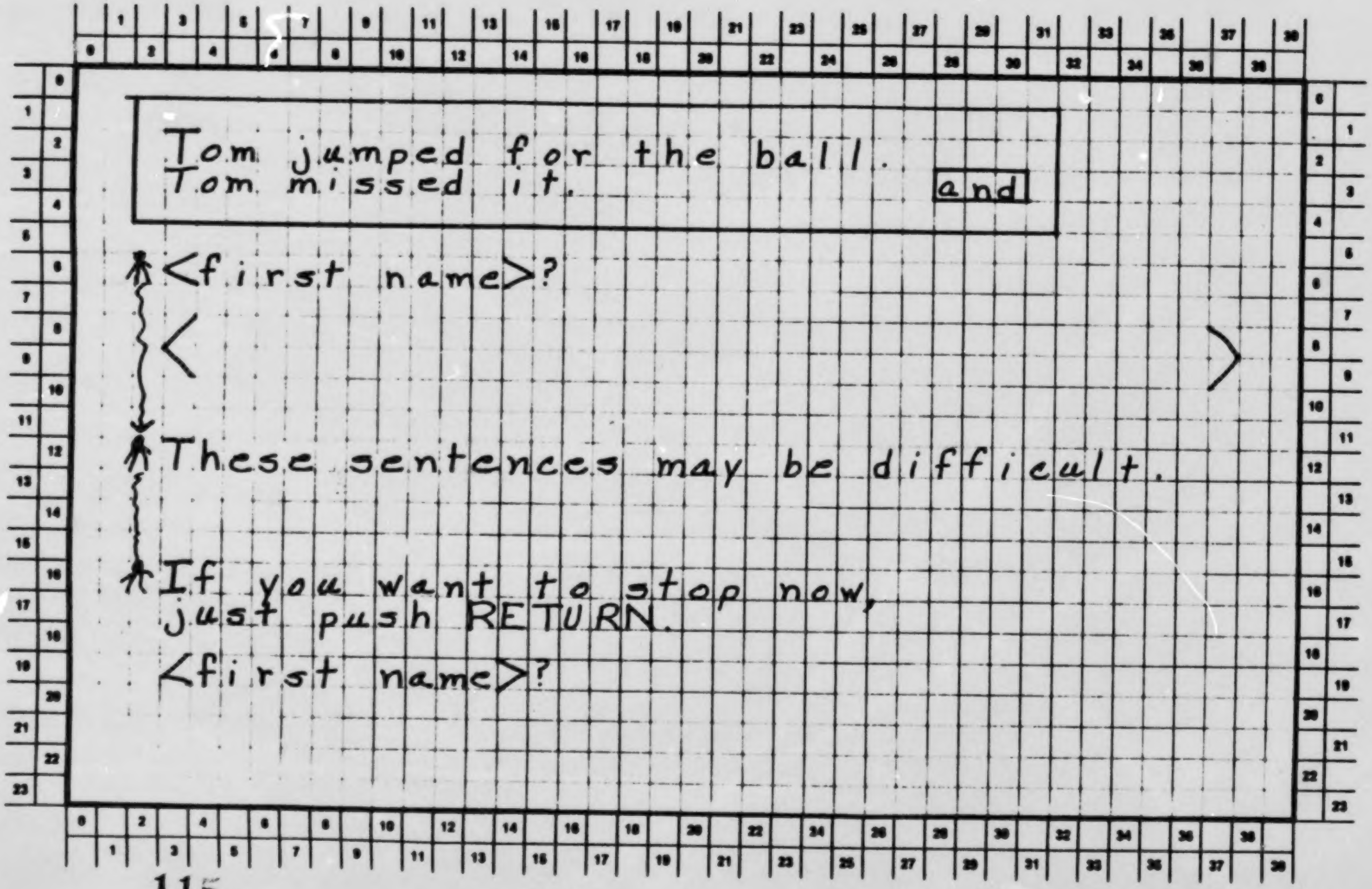
Student's response fits here.

These sentences may be difficult.

If you want to go back
to the example,
just push RETURN.

<first name>?

SCREEN: Termination Routine - Screen 5 (part b)



Tom jumped for the ball.
Tom missed it. and

<first name>?

< >

These sentences may be difficult.

If you want to stop now,
just push RETURN.

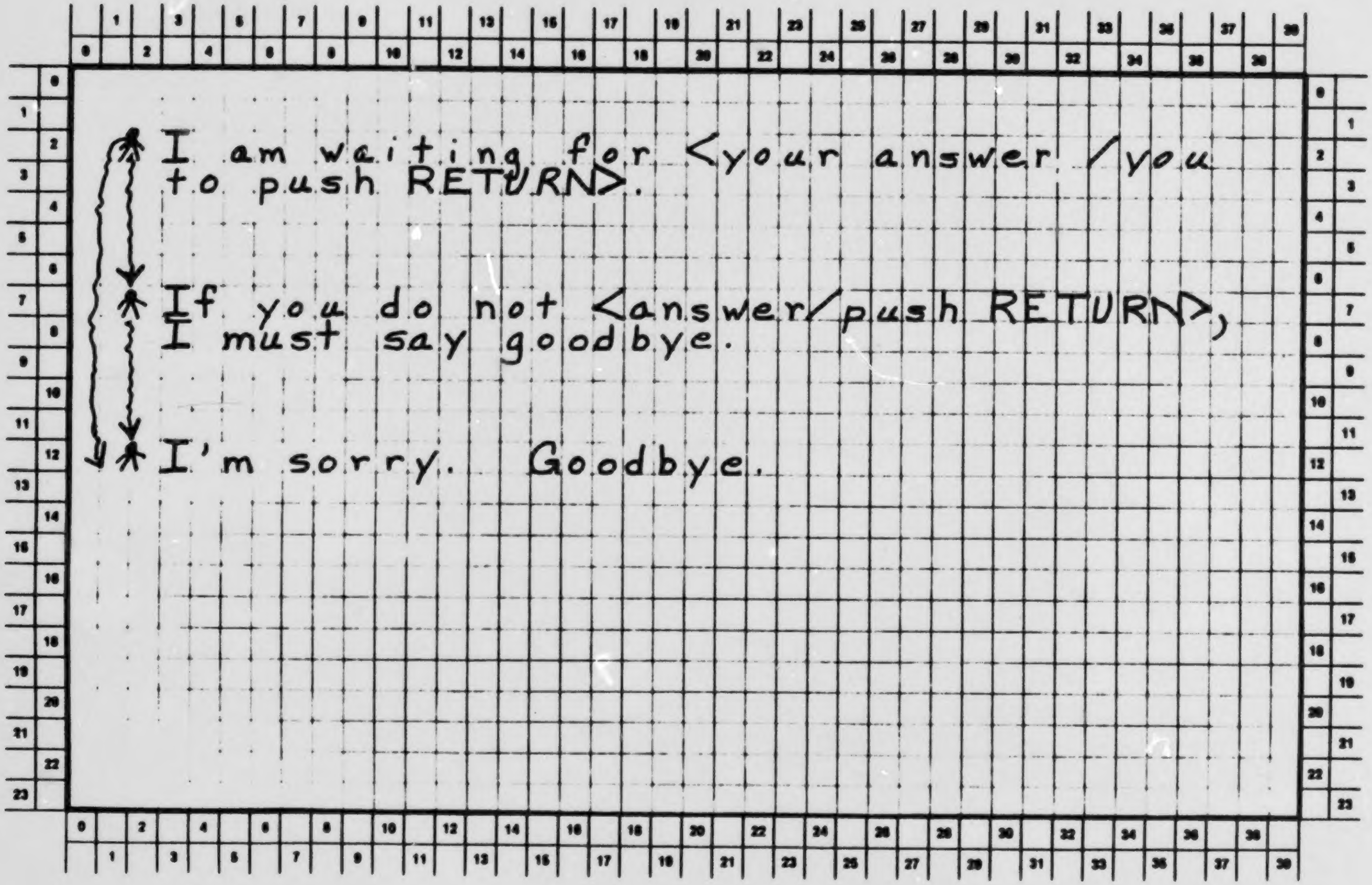
<first name>?

COMMENTS

Practice item fits here.

Student's response fits here.

SCREEN: Termination Routine - Screen 6



I am waiting for <your answer /you
to push RETURN>.

If you do not <answer/push RETURN>,
I must say goodbye.

I'm sorry. Goodbye.

COMMENTS

Line prints only if student does not respond to message above in 30 seconds.

SCREEN: Termination Routine - Screen 7

COMMENTS

When you have finished
your sentence,
please push RETURN.

If you do not, I must say goodbye.

I'm sorry. Goodbye.

Line prints only if student has not responded to message above within 15 seconds.

SOUTHWEST REGIONAL LABORATORY
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COMPUTER INSTRUCTION ON SENTENCE COMBINING

Ann Humes

ABSTRACT

An interactive computer program for providing instruction in sentence combining for upper-elementary and middle-school students is described. The content of the program is summarized. Then instruction and practice are outlined, as well as procedures that terminate the program. Finally, problems in developing highly interactive computer-based instruction are discussed.

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COMPUTER INSTRUCTION ON SENTENCE COMBINING

Ann Humes

Computer-based instructional resources for teaching composition are generally limited to the component skills of writing, such as punctuation and capitalization. Hardware and software limitations have precluded the development of computer instruction requiring actual composing activites. Only relatively recently have equipment developments enabled designers and developers of instruction to produce programs that involve the student in actual text manipulation and production. Advances include programs that allow students to select previously written story segments and form them into a story to be printed (referenced in Shostak, 1982); programs that allow students to input elements of discourse that the computer rearranges into a complete product (Marcus, 1982); programs that guide students in generating ideas for composing (Burns & Culp, 1980). Still other programs, devised as text-editing software, teach rewriting and editing (1) by evaluating users' input for such features as spelling, punctuation, grammar and (2) by reporting on users' sentence length, sentence type, and number of passive verb phrases (e.g., Cohen, 1982; Frase, MacDonald, Gingrich, Keenan, & Collymore, 1981; Miller, Heidorn, & Jensen, 1981).

Still inadequate is the number of programs that both teach the principles of composing and evaluate actual text that students input in response to computer-presented instruction. However, a program has now been developed that exploits the computer's potential to perform these tasks for upper-elementary and middle-school students. This paper describes that program. The paper first discusses the content of the program. Then it outlines the mainline instruction presented after students input their names, which the computer uses to address the student throughout the instructional period. This section also describes the corresponding branching that occurs in response to students' performance on the tasks. In the next section, the paper explains the procedures that terminate the program. The final section discusses some of the problems involved in developing highly interactive instruction for teaching composition on a microcomputer.

CONTENT

The content of this interactive program is sentence combining. Sentence combining is an instructional technique employed to enhance students' syntactic fluency and versatility (e.g., Lawlor, 1980, O'Hare, 1973). Students are given two or more short, simple sentences that they combine into one longer, complex and/or compound sentence. Students may begin with simple coordinate combining as, for instance, in the following sentence-combining item:

The winning team ran onto the field. The winning team lifted the pitcher into the air.	Combine with "and."

The winning team ran onto the field and lifted the
pitcher into the air.

Students involved in practice on combining proceed through items entailing simple structures to more complex combinations completed by subordinating and embedding elements of one sentence into another sentence.

Sentence combining was selected for the current study of composition instruction with the computer because it is based on a solid research foundation and because certain constraints make it amenable to computer-based instruction. For example, the expected output can be specified so that developing an algorithm for evaluating student text is feasible. Moreover, most students have had little experience with computers or with their word processing features accessed to input text. Therefore, relatively straightforward content is appropriate for initial instruction.

The current program contains four lesson parts. These parts differ either in the syntactic structures focused on or in the number of sentences to be combined. The four parts teach the following constructions:

Part A: Coordinate predicates, e.g.,

Tom fell to the ground.
Tom ripped his uniform.

Tom fell to the ground and ripped his uniform.

Part B: Coordinate adverbs and predicate adjectives, e.g.,

Earthquakes often strike suddenly.
Earthquakes often strike violently.

Earthquakes often strike suddenly and violently.

Part C: Coordinate direct objects and predicate nominatives, e.g.,

Peter is my friend.
Peter is my neighbor.

Peter is my friend and neighbor.

Part D: Three kernel sentences, comprised of the syntactic structures presented in Parts A-C, e.g.,

The ticket agent was friendly.
The ticket agent was helpful.
The ticket agent was patient.

The ticket agent was friendly, helpful, and patient.

Focusing on such relatively simple content for Lesson 1 is purposeful: It allows students to become familiar with both computer use and the sentence-combining techniques. However, content for later lessons is increasingly more complex. The complete scope of and sequence for the remaining eleven lessons are specified by Lawlor (1981).

INSTRUCTION

After first displaying a title screen, the computer requests that students type in their names. The name is then filed for use throughout the lesson.

For each part of the lesson, students are first given instruction on combining sentences to create a specific syntactic structure. While the screen displays the kernel sentences and the combining cue, instruction explains the combining cue, referred to as a "joiner," and briefly guides the students through the process: writing the words in the first sentence, but omitting the period; then adding the joiner, and writing the non-repeated elements of the subsequent kernel(s). An arrow flashes in the margin to guide reading and to direct students' attention to the example being constructed. Other elements that flash at appropriate points during the instruction are the joiner and the set of repeated words in the kernel sentences.

Students are then informed that they will combine some sentences and that they should check their answer sentence for punctuation, capitalization, and spelling before pushing the return key. The subsequent practice item consists of kernel sentences to be combined in the same way as the instructional example was combined. After students type in their answer and push the return key, the computer branches to evaluate the students' response.

The computer evaluates the response in a sequence of steps, branching where necessary for additional instruction or looping back to an earlier point in the evaluation if students change their response. First the computer checks for a capital letter at the beginning of the response. If there is no capital, the computer asks students to change the first letter to a capital. If students do not change the letter, the computer branches to the Syntax Routine to present the correct answer and then a new example and new practice item. However, if students have been presented a third example and still do not input a correct response, the computer terminates the lesson.

If the sentence has a capital letter, or if students change the first letter to a capital, the computer checks for a period at the end of the sentence. If no period is found, the computer asks for a period to be added. If students do not add a period, the computer branches to the Syntax Routine, as described above.

The computer then checks for the combining cue or cues, and, if missing, asks students to insert the cue(s) in the correct place. If students do not add the cue(s), the computer branches to the Syntax Routine described above.

If the sentence contains the cue or cues, the computer checks the sentence for the correct number of words. If the number of words is less than the correct number, the computer displays the following message:

> I am having trouble with your answer. Have you left out any spaces or words? Please fix your sentence. Then push the RETURN key.

If, however, the number of words is greater than the correct number, the computer displays this message:

> I am having trouble with your answer. Have you put in any extra spaces or extra words? Please fix your sentence. Then push the RETURN key.

If students make the correction, the computer again checks the sentence for the correct number of words. If the number is still not correct, or if students do not make changes, the computer branches to the Syntax Routine described above.

The computer then checks each word for spelling, accepting words with an adjacent extra space. For each mismatch, the computer displays the following screen:

> Are you sure you mean to write ? Check the sentences at the top for the correct way to write the word. Please fix the word. Then push the RETURN key.

If the mismatch is a spelling error and students do not correct it, the computer corrects the word if it meets the criteria of the spelling algorithm. Spelling errors checked by the computer include inappropriate punctuation marks adjacent to a word, doubled/non-doubled letters, transposed letters, a for an and vice versa, one missing letter, one extra letter, one wrong letter, and inappropriately capitalized or uncapitalized words other than proper nouns and the first word of the sentence.

If the mismatch is not a spelling error and students change the answer, the computer loops back in the evaluation procedure to the point at which it checks the sentence for a period at the end. However, if the mismatch is not a spelling error and if students do not correct it, the computer branches to the Syntax Routine described above.

When the response has been successfully processed through all the evaluation steps described above, the computer provides positive reinforcement for the correct answer and presents another practice item unless the student has completed three correct responses. In that case, the computer provides instruction on a new combining procedure.

TERMINATION

Under certain circumstances the computer terminates the lesson. As previously noted, if students have been branched through a third example and still do not input a correct response, the computer terminates the program. The computer also terminates the lesson if students' operating time is close to twenty minutes and the computer is about to branch to the Syntax Routine, to another practice item, or to instruction on a new combining procedure. Termination also occurs, of course, when students have completed the entire lesson.

CONCLUSION

Programming even such "simple" content as sentence combining is far from easy. Once computers are dealing with natural language, programming becomes far more complex than it is for multiple-choice instruction, particularly since the number of possible responses is enormous when students are permitted to type in their own responses. Instructional designers are then confronted not only with the problems involved in accounting for all possible student answers, but with the programming difficulty caused by limited microcomputer memory as well. For example, original specifications included visually exciting graphics to present the combining procedures. However, it was discovered that programming these graphics would use up too much memory; the remaining memory would not then accommodate actual student practice.

Because memory limits are quickly exceeded, designing a means for checking a sentence to verify that it has the right components posed serious programming problems because the computer could not do a comprehensive word-for-word match for all syntactic possibilities. Consequently, another means of checking for the appropriate sentence structure had to be devised. Checking for the combining cue is one part of the chosen strategy; counting words is another.

Enormous problems were also caused by the spelling check since spelling errors in any kind of word had to be defined. Thus an algorithm had to be devised for word features so that the computer could determine whether a student's sentence contained a spelling error.

In addition to accommodating the stringent demands of programming to check a student response, the program design had to address other concerns. Because students need to edit text to correct their own responses, a text-editing system had to be developed as part of the program. This system complicated programming and used up memory. The design also had to consider such contingencies as students not pushing return when they are supposed to, students typing partial answers, and students refusing to type at all.

Despite the programming problems it posed and despite the fact that this instructional program is much simpler than that originally specified, the developed system is a highly interactive program. The instruction has been programmed and is operating, and it has been successfully piloted with the appropriate audience of users. Given sufficient user interest and sufficient resources, a complete program of sentence-combining instruction could be developed, thus employing the full capabilities of computers in higher-level composing activities.

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Revised Specifications for
Sentence Combining
on the Microcomputer*

Ann Humes

On the following pages are more detailed specifications for programming the instruction described in TN 2-82/36.

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*This revised version is programmed and found on the disk in Part I of this report.

Lesson Initiation and Termination, and Record-Keeping

The student begins with the Log-On Routine and her/his time is terminated under the conditions described in the Termination Routines according to her/his responses (see Procedures and Routines). The computer records all student responses.

The computer limits responses to alphabetical characters, period, and comma.

The computer keeps a record of the time elapsed during the session and records the time elapsed between the display of <*student's name*>? and the beginning of the student's response.

The computer keeps a record of all the student's responses to determine progressing or branching.

Lesson Prerequisite

The program requires a movable cursor so the student can correct errors rather than retype complete responses.

LOG-ON ROUTINE

1\.

Combining Sentences
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——> Delay before next screen.

2\.

Hello. I am going to teach you how to combine two or more sentences into one good sentence.

Please type your first name. Then push the RETURN key.

——> When name is typed, computer files name for use throughout instructional period.

EXAMPLE ROUTINE

Example item (sentences in brackets) remains on screen throughout routine.

PARTS A and B	PART C	PART D	COMMENTS (Apply to Parts A-D)
1. Read the sentences. Look at the joiner in parentheses. ⟨*first/next example item in sequence*⟩ (and) Press RETURN when you are ready.	1. /Same as A and B./	1. Read the sentences below. Look at the joiners in parentheses. ⟨*first/next example item in sequence*⟩ (,) (, and) Push RETURN when you are ready.	--> Delay before this sentence is displayed.
2. When you combine sentences, type the first sentence, but leave off the period. Press RETURN when you are ready.	2. /Same as A and B./	2. /Same as A and B./	Arrow flashes in margin to direct reading. After delay, arrow flashes in margin by answer being constructed, and first sentence, without the period, then appears on the screen through simulated typing. --> Delay before this sentence.
3. Next add the joiner in parentheses. Press RETURN when you are ready.	3. /Same as A and B./	3. Next add the first joiner in parentheses. RETURN when you are ready.	--> Arrow flashes in margin to direct reading. After delay, arrow flashes in margin by answer being constructed, and joiner then appears on the screen through simulated typing. Then joiner flashes. --> Delay before this sentence is displayed.
4. Then type the second sentence, leaving out the repeated words. Push RETURN when you are ready.	4. /Same as A and B, but adding following sentence after delay:/ However, repeated words like "the" and "a" or "an" must sometimes be left in so the sentence sounds better.	4a Same as A and B.	--> Arrow flashes in margin to direct reading. After delay, repeated words flash. After delay, arrow flashes in margin by answer being constructed, and unrepeated part of second sentence appears on the screen through simulated typing. --> Delay before this sentence is displayed.
		4b Next add the second joiner in parentheses. Push RETURN when you are ready.	--> Arrow flashes in margin to direct reading. After delay, arrow flashes in margin by answer being constructed, and joiner then appears on the screen through simulated typing. Then joiner flashes. --> Delay before this sentence is displayed.
		4c Then type the third sentence, leaving out the repeated words. Push RETURN when you are ready.	--> Arrow flashes in margin to direct reading. After delay, arrow flashes in margin by answer being constructed, and the unrepeated part of third sentence appears on the screen through simulated typing. --> Delay before this screen.

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5. Now you can combine some sentences yourself. For each set of sentences, take the time you need to type your answer carefully. Then check for spelling and typing errors before you push the RETURN key. Now push RETURN to see the first set of sentences.

6. < *first practice item in sequence for procedure being taught* >

cue

<*first name*>?

--> The computer branches to the Item Processing Routine after the student types in the response.

ITEM PROCESSING PROCEDURE FOR PRACTICE ITEMS

The following steps are completed in sequence, with branching as necessary. Each frame is displayed concurrently with item stimulus and response being processed, but the frame leaves the screen before the next processing instruction is displayed.

1. [The computer checks for a capital letter at the beginning of the student's response. If there is no capital, the computer displays the following:]

```
Please change the first letter to a capital.  Then
push the RETURN key.
```

If the student does not change the capital before pushing Return a second time, the computer branches to the Syntax Routine.

2. [The computer checks for a period at the end of the sentence. If there is no period, the computer displays the following:]

```
Please add a period at the end of the sentence.
Then push the RETURN key.
```

If the student does not add the period before pushing Return a second time, the computer branches to the Syntax Routine.

3. [The computer checks for the cue(s). If the cue(s) is (are) not in the response, the computer displays the following:]

```
Your sentence should have '<cue(s)>' in it.
Please add '<cue(s)>' in the correct place.  Then
push RETURN.

<first name>?
```

[If the student does not add the cue before pushing Return, the computer branches to the Syntax Routine.]

4. [The computer checks the sentence for the correct number of words.]

[a. If the number of words is less than the correct number, the computer displays the following:]

```
I am having trouble with your answer.  Have you
left out any spaces or words?  Please fix your
sentence.  Then push the RETURN key.
```

ITEM PROCESSING PROCEDURE FOR PRACTICE ITEMS (continued)

[b. If the number of words is greater than the correct number, the computer displays the following:]

> I am having trouble with your answer. Have you put in any extra spaces or extra words? Please fix your sentence. Then push the RETURN key.
>
> <*first name*>?

[If the student makes a correction, the computer checks the sentence for the correct number of words. If the number is not correct, the computer allows a second correction. If the number is still not correct, or if the student does not make changes, the computer branches to the Syntax Routine.]

5. [The computer checks each word for a match, accepting words with an adjacent extra space. For each mismatch, the computer displays the following:]

> Are you sure you meant to write '<*mismatch*>?' Check the sentences at the top for the correct way to write the word. Please fix the word. Then push the RETURN key.

[a. If the mismatch is a spelling error (see * below) and the student does not correct the mismatch within 30 seconds or corrects it inappropriately, the computer displays the following:]

> I think you mean to write <*correct word*>. To correct your answer, just press RETURN.

[The computer corrects the student's response when the Return key is pressed.]

---

*Misspellings: inappropriate punctuation marks adjacent a word (although for some circumstances a period following a word is treated as a syntax error); doubled/non-doubled letters; transposed letters; a/an; one missing letter; one extra letter; one wrong letter; inappropriately capitalized/uncapitalized words other than first word of sentence (this misspelling does not apply if student types in all caps).

ITEM PROCESSING PROCEDURE FOR PRACTICE ITEMS (continued)

[b. If the mismatch is not a spelling error and the student changes the answer, the computer loops to step 2 in the Item Processing Procedure.]

[c. If the mismatch is not a spelling error and the student does not correct the answer, the computer branches to the Syntax Routine.]

6. [For a correct answer, the computer branches to the Progress Routine, displaying Progress Routine No. 1 at the bottom of the screen for this previously processed item. However, if the practice item is the third correctly answered item and is not as the end of a lesson, the computer displays the following:]

> Right again, <*first name*>! Now let's learn another way to combine sentences. Push RETURN.

[The computer then goes to the next instruction in the lesson sequence, branching to the Example Routine to initiate that instruction.]

PROGRESS ROUTINE

[Displayed at bottom of screen with correct response that has been processed:]

1. Very good, *<first name>*. Press RETURN to try another set of sentences.

2. *<next item in sequence>*

   <first name>?

[Screen displays next item in sequence. After student types in the response and pushes the RETURN key, the computer branches to the Item Processing Routine.]

SYNTAX ROUTINE

[The stimulus and the incorrect response are still on the screen.]

1.

> I was looking for a different answer. This is a good way to combine these sentences:
>
> *<answer to missed item>*
>
> Let's go over another example. Press RETURN to continue.

[The correct answer flashes three times. After a pause for the student to study the correct answer, the computer displays the next example (Example Routine to point of return branching to Syntax Routine). After the example, the computer displays the following sentence:]

2.

> Now I think you are ready to try again, *<first name>*.
> Push RETURN to try another set of sentences.

[The computer displays the next item in sequence and then goes through Item-Processing Procedure for Practice Items.]

3. [After the student types "Bye," or after student is branched through a third example, a third consecutive mismatch for syntax that causes branching to Syntax Routine elicits this response from the computer, which then terminates the lesson:]

> That is enough for now. We will work on this again later.
> Goodbye, *<first name>*.

TERMINATION ROUTINES

1. [When the student has completed an entire lesson, the computer displays the following:]

> Good work <*first name*>. You have completed this lesson. Goodbye, <*first name*>.

----

2. [If the student's operating time on the computer is close to 20 minutes, the computer, at the point where it is about to branch to either the Progress Routine or the Syntax Routine, will display the following:]

> That is enough for now. We will work on this again later. Goodbye, <*first name*>.

[The computer will terminate the lesson.]

CONTENT FOR LESSON 1

Ann Humes
with Joseph Lawlor and Larry Gentry

On the following pages are specifications of content for the first lesson of the microcomputer instruction for sentence combining. Part A treats coordinate predicate phrases; Part B covers coordinate adverbs and predicate adjectives; Part C includes coordinate direct objects and predicate nominatives; Part D reviews all structures in multiple kernel items.

Specifications for Lesson 1: Part A--Coordinate Predicate Phrases

EXAMPLES

1. Ana hit the ball.
   Ana sent it soaring. Boxed cue: and *

   Word that is pushed off the screen:
   Words pushed by boxed cue: sent it soaring.

   Correct sentence: Ana hit the ball and sent it soaring.

2. Maria reached with her glove.
   Maria caught the ball. Boxed cue: and

   Word that is pushed off the screen:
   Words pushed by boxed cue: caught the ball.

   Correct sentence: Maria reached with her glove and caught the ball.

3. The pitcher looked at Mike.
   The pitcher threw to the plate. Boxed cue: and

   Words that are pushed off the screen: The pitcher
   Words pushed by boxed cue: threw to the plate.

   Correct sentence: The pitcher looked at Mike and threw to the plate.

PRACTICE ITEMS**

1. Tom jumped for the ball.
   Tom missed it. Boxed cue: and

   Correct answer (8 words): Tom jumped for the ball and missed it.

2. Tom fell to the ground.
   Tom ripped his uniform. Boxed cue: and

   Correct answer (9 words): Tom fell to the ground and ripped his uniform.

3. Juan swung at the ball.
   Juan popped it into the air. Boxed cue: and

   Correct answer (11 words): Juan swung at the ball and popped it into the air.

---

*In revised version all cues are in parentheses rather than boxes.

**Cue for Step 3 of Item-Processing Procedure for Items 1-9: and

4. Maria swung.
Maria hit a grounder to the shortstop. Boxed cue: and

Correct answer (9 words): Maria swung and hit a grounder to the shortstop.

5. Mike bunted toward the pitcher.
Mike beat the throw to first. Boxed cue: and

Correct answer (11 words): Mike bunted toward the pitcher and beat the throw to first.

6. Ana charged the ball.
Ana made a great throw to second. Boxed cue: and

Correct answer (11 words): Ana charged the ball and made a great throw to second.

7. The umpire waved her arm.
The umpire called Mike out. Boxed cue: and

Correct answer (9 words): The umpire waved her arm and called Mike out.

8. The pitcher threw a fast ball.
The pitcher struck the last batter out. Boxed cue: and

Correct answer (12 words): The pitcher threw a fast ball and struck the last batter out.

9. The winning team ran onto the field.
The winning team lifted the pitcher into the air. Boxed cue: and

Correct answer (14 words): The winning team ran onto the field and lifted the pitcher into the air.

Specifications for Lesson 1: Part B--Coordinate Adverbs and Predicate Adjectives

EXAMPLES

1. The surface of the wall was smooth.
   The surface of the wall was cool. Boxed cue: and

   Words that are pushed off the screen:
   The surface of the wall was

   Word pushed by boxed cue: cool.

   Correct sentence: The surface of the wall was smooth and cool.

2. The library will be closed today.
   The library will be closed tomorrow. Boxed cue: and

   Words that are pushed off the screen:
   The library will be closed

   Word pushed by boxed cue: tomorrow.

   Correct sentence: The library will be closed today and tomorrow.

3. Earthquakes often strike suddenly.
   Earthquakes often strike violently. Boxed cue: and

   Words that are pushed off the screen:
   Earthquakes often strike

   Word pushed by boxed cue: violently.

   Correct sentence: Earthquakes often strike suddenly and violently.

PRACTICE ITEMS*

1. Tom spoke clearly.
   Tom spoke calmly. Boxed cue: and

   Correct answer (5 words): Tom spoke clearly and calmly.

2. The baby slept soundly.
   The baby slept quietly. Boxed cue: and

   Correct sentence (6 words): The baby slept soundly and quietly.

3. The show was long.
   The show was boring. Boxed cue: and

   Correct answer (6 words): The show was long and boring.

---

*Cue for Step 3 of Item-Processing for Items 1-9: and

4. Jan always seems happy.
Jan always seems carefree. Boxed cue: $\boxed{\text{and}}$

Correct answer (6 words): Jan always seems happy and carefree.

5. That pond is deep.
That pond is muddy. Boxed cue: $\boxed{\text{and}}$

Correct answer (6 words): That pond is deep and muddy.

6. The weather turned rainy.
The weather turned cold. Boxed cue: $\boxed{\text{and}}$

Correct answer (6 words): The weather turned rainy and cold.

7. The deer jumped quickly.
The deer jumped gracefully. Boxed cue: $\boxed{\text{and}}$

Correct answer (6 words): The deer jumped quickly and gracefully.

8. Maria's directions were brief.
Maria's directions were precise. Boxed cue: $\boxed{\text{and}}$

Correct answer (6 words): Maria's directions were brief and precise.

9. Michael seemed dazed.
Michael seemed shocked. Boxed cue: $\boxed{\text{and}}$

Correct answer (5 words): Michael seemed dazed and shocked.

Specifications for Lesson 1: Part C--Coordinate Direct Objects and Predicate Nominatives

REVISIONS FOR DISPLAYS FOR SUBROUTINES OF EXAMPLE ROUTINE*

Revision of display for instructional subroutine 2:

> Remember, the first thing you do when you combine sentences is move the word in the box to the beginning of the line.

Revision of display for instructional subroutine 3:

> Then you take out the repeated words. However, repeated words like "the" and "a" or "an" sometimes must be left in so the sentence sounds better.

EXAMPLES

1. George Washington was a general.
   George Washington was a President. Boxed cue: and

   Words that are pushed off the screen:
   George Washington was

   Words pushed by boxed cue: a president.

   Correct sentence: George Washington was a general and a president.

2. I enjoyed the hamburger.
   I enjoyed the coke. Boxed cue: and

   Words that are pushed off the screen:
   I enjoyed

   Words pushed by boxed cue: the coke.

   Correct sentence: I enjoyed the hamburger and the coke.

3. Mary bought a magazine.
   Mary bought a book. Boxed cue: and

   Words that are pushed off the screen:
   Mary bought

   Words pushed by boxed cue: a book.

   Correct sentence: Mary bought a magazine and a book.

---

*For original specifications only.

PRACTICE ITEMS*

1. Jan ordered a hamburger.
   Jan ordered a coke. Boxed cue: and

   Correct answer (7 words): Jan ordered a hamburger and a coke.

2. Peter had a hot dog.
   Peter had a milk shake. Boxed cue: and

   Correct answer (9 words): Peter had a hot dog and a milk shake.

3. Peter is my friend.
   Peter is my neighbor. Boxed cue: and

   Correct answer (6 words): Peter is my friend and neighbor.

4. They chased the pig.
   They chased the goat. Boxed cue: and

   Correct answer (7 words): They chased the pig and the goat.

5. Magic Johnson is a basketball player.
   Magic Johnson is a millionaire. Boxed cue: and

   Correct answer (9 words): Magic Johnson is a basketball player and a millionaire.

6. We played baseball.
   We played football. Boxed cue: and

   Correct answer (5 words): We played baseball and football.

7. Amelia Earhart was a nurse.
   Amelia Earhart was a pilot. Boxed cue: and

   Correct answer (8 words): Amelia Earhart was a nurse and a pilot.

8. The farmer planted the flowers.
   The farmer planted the tree. Boxed cue: and

   Correct answer (8 words): The farmer planted the flowers and the tree.

9. Marie Curie was a scientist.
   Marie Curie was a Nobel prize winner. Boxed cue: and

   Correct answer (10 words): Marie Curie was a scientist and a Nobel prize winner.

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*Cue for Step 3 of Item-Processing for Items 1-9: and

Specifications for Lesson 1: Part D--Multiple Kernels

REVISIONS FOR DISPLAYS FOR SUBROUTINES OF EXAMPLE ROUTINE*

Revision of display for instructional subroutine 1:

> Sometimes you can combine more than two sentences. Read these three sentences. Then look at the word in the box. When you are finished, push the RETURN key.

Revision of display for instructional subroutine 2:

> Sometimes you may have more than one thing in a box. Because the things in the box are used to join sentences, we will call them joiners.
>
> The second sentence has a new kind of joiner in the box. It is a comma. Since the comma is a joiner, it moves to the beginning of the line.

Revision of display for instructional subroutine 3:

> Then the repeated words in the sentences are taken out.

Revision of display for instructional subroutine 4:

> Then you use the joiners in the boxes to join what is left to make one sentence. But first you must take out the periods at the end of the first two sentences.

EXAMPLES

1. Juan jumped.
   Juan caught the ball. $\boxed{,}$
   Juan fired to first base. $\boxed{\text{, and}}$

   Words that are pushed off the screen:
   sentence 2: Juan
   sentence 3: Juan

   Words pushed by boxed cues:

   $\boxed{,}$ → caught the ball

   $\boxed{\text{, and}}$ → fired to first base.

   Correct Sentence: Juan jumped, caught the ball, and fired to first base.

---

*For original specifications only.

2. Jack bought ice cream.
Jack bought cake. $\boxed{,}$
Jack bought cookies. $\boxed{\text{, and}}$

Words that are pushed off the screen:
sentence 2: Jack bought
sentence 3: Jack bought

Words pushed by boxed cues:

$\boxed{,}$ → cake

$\boxed{\text{, and}}$ → cookies.

Correct sentence: Jack bought ice cream, cake, and cookies.

3. Magic leaped in the air.
Magic spun around. $\boxed{,}$
Magic slammed the ball through the basket. $\boxed{\text{, and}}$

Words that are pushed off the screen:
sentence 2: Magic
sentence 3: Magic

Words pushed by boxed cues:

$\boxed{,}$ → spun around.

$\boxed{\text{, and}}$ → slammed the ball through the basket.

Correct sentence: Magic leaped in the air, spun around, and slammed the ball through the basket.

PRACTICE ITEMS*

1. The lion stretched its legs.
The lion yawned. Boxed cue: $\boxed{,}$
The lion fell asleep. Boxed cue: $\boxed{\text{, and}}$

Correct answer (9 words): The lion stretched its legs, yawned, and fell asleep.

2. The ticket agent was friendly.
The ticket agent was helpful. Boxed cue: $\boxed{,}$
The ticket agent was patient. Boxed cue $\boxed{\text{, and}}$

Correct answer (8 words): The ticket agent was friendly, helpful, and patient.

---

*Cues for Step 3 of Item-Processing Procedure for Items 1-9 are , and , and.

3. Danny won two stuffed animals.
Danny won a goldfish. Boxed cue: $\boxed{,}$
Danny won a blue ribbon. Boxed cue: $\boxed{\text{, and}}$

Correct answer (11 words): Danny won two stuffed animals, a goldfish, and a blue ribbon.

4. The soldiers snapped to attention.
The soldiers saluted. Boxed cue: $\boxed{,}$
The soldiers waited for their orders. Boxed cue: $\boxed{\text{, and}}$

Correct answer (11 words): The soldiers snapped to attention, saluted, and waited for their orders.

5. The hikers were cold.
The hikers were hungry. Boxed cue: $\boxed{,}$
The hikers were tired. Boxed cue: $\boxed{\text{, and}}$

Correct answer (7 words): The hikers were cold, hungry, and tired.

6. Sharon is a fine singer.
Sharon is a talented musician. Boxed cue: $\boxed{,}$
Sharon is a respected songwriter. Boxed cue: $\boxed{\text{, and}}$

Correct answer (12 words): Sharon is a fine singer, a talented musician, and a respected songwriter.

7. An eagle swooped down from the cliff.
An eagle plunged into the water. Boxed cue: $\boxed{,}$
An eagle caught a fish. Boxed cue: $\boxed{\text{, and}}$

Correct answer (14 words): An eagle swooped down from the cliff, plunged into the water, and caught a fish.

8. The witness seemed tense.
The witness seemed nervous. Boxed cue: $\boxed{,}$
The witness seemed suspicious. Boxed cue: $\boxed{\text{, and}}$

Correct answer (7 words): The witness seemed tense, nervous, and suspicious.

9. This restaurant serves good steaks.
This restaurant serves great seafood. Boxed cue: $\boxed{,}$
This restaurant serves delicious desserts. Boxed cue: $\boxed{\text{, and}}$

Correct answer (10 words): This restaurant serves good steaks, great seafood, and delicious desserts.

COMPLETE CONTENT FOR SENTENCE COMBINING ON THE MICROCOMPUTER*

Joseph Lawlor

This section provides detailed specifications for the content of the sentence-combining instruction described in the first two sections in this part. The specifications are discussed in relation to studies of written language development and in comparison to existing sentence-combining curricula, both experimental programs and commercially published texts. Problems in sequencing sentence-combining instruction are also described. Next, the paper presents several suggestions for designing a sentence-combining program. An attachment to this paper lists the content and sequence for instruction, as well as sample items.

INTRODUCTION TO SENTENCE COMBINING

Sentence combining has been widely recommended as an effective technique for improving students' written syntactic fluency (e.g., Cooper, 1971 and 1973). Research has consistently shown that students who practice sentence combining tend to write longer, more richly elaborated sentences than do students who have no sentence-combining experience (e.g., Mellon, 1969; Combs, 1976). In addition, there are indications that sentence combining can lead to an improvement in the overall quality of students' writing (e.g., O'Hare, 1973; Daiker, Kerek, and Morenberg, 1978). See Lawlor (1980) for a review of the sentence-combining literature.

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*Originally prepared as Technical Note No. 2-81/08 ("Instructional Specifications for Sentence Combining").

Sentence-combining techniques grew out of the developmental research of Kellogg Hunt (1965, 1970), who analyzed writing samples produced by writers of various ages. In comparing the syntax used by these writers, Hunt found that older writers tended to write longer T-units*, longer clauses, and more clauses per T-unit than did their younger counterparts. These differences were largely due to the increased use of embedding transformations--syntactic manipulations that allowed older writers to compact and consolidate more information into each of their sentences. Young writers, on the other hand, missed many opportunities to consolidate information; they tended to express related ideas in separate sentences. For example, a young writer might compose the following:

> Moby Dick was a very big whale. He lived in the sea. (Hunt, 1966, p. 733)

An older writer, though, would be more likely to combine these two propositions into a single sentence:

> Moby Dick was a very big whale who lived in the sea. (p. 733)

Hunt's findings, which were generally substantiated by O'Donnell, Griffin, and Norris (1967), also suggested that the development of written syntactic maturity proceeded at an extremely slow rate, taking place over many years. Sentence combining, then, was designed to "speed up" this slow process.

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*Hunt (1965) devised the T-unit (minimal terminable unit) as the basis for his quantative analysis of syntax. A T-unit consists of one main clause plus any subordinate clauses that are attached to or embedded within it.

Sentence-combining exercises require students to combine a series of short sentences into one longer sentence. Students' responses can be constrained by a set of sentence-combining "signals" (see Figure 1), or the sentences can be unsignaled, allowing the student to experiment freely with various combining options (see Figure 2). In both cases, students are encouraged to say their responses out loud before writing them down. Sentence combining is based on the premise that students possess a vast repertoire of syntactic skills--a repertoire that is developed through years of oral language acquisition. Thus sentence-combining does not teach anything "new" about language; it merely asks students to apply their linguistic resources in focused practice so that they may be more aware of syntactic options when they compose original text.

Figure 1

Signaled Sentence-Combining Exercise

SOMETHING is impossible.
A chef cooks meals. (IT-FOR-TO)
The chef is working in this small kitchen.
The meals will satisfy all customers.
(WHICH/THAT)

Solution: It is impossible for a chef working in this small kitchen to cook meals that (which) will satisfy all customers. (O'Hare, 1973, p. 89)

Figure 2

Unsignaled Sentence-Combining Exercise

Children are remarkable for something.
These children are young.
The something is an ability.
The ability is to remain "in touch."
They are in touch with their feelings.

Possible Solution: Young children are remarkable for their ability to remain "in touch" with their feelings. (Strong, 1973, p. 17)

CONTENT FOR SENTENCE-COMBINING INSTRUCTION

The content for sentence-combining instruction consists of those syntactic operations that writers employ to achieve maximum communication with a minimum number of words. The English language provides a variety of ways by which writers may consolidate information. First, they may simply combine sentences (or parts of sentences) with a coordinating conjunction; e.g.:

We went to a movie. We had a good time.	>	We went to a movie and (we) had a good time.

Second, writers may join sentences by using adverbial subordinating conjunctions; e.g.:

We stopped for lunch. We were hungry.	>	We stopped for lunch because we were hungry.

Third, writers may combine sentences by using adjectival embedding operations; e.g.:

The team will be the state champion. The team wins this game.	>	The team that wins this game will be the state champion.

Finally, writers may consolidate sentences by using nominal embedding operations; e.g.:

Something worried Paula. Jack was late.	>	The fact that Jack was late worried Paula.

However, research has shown that these four types of combining processes are not equally effective in achieving the succintness of expression that is characteristic of mature writing. The excessive use of coordinating conjunctions, for example, is a characteristic of immature writing (Hunt, 1965, 1970; O'Donnell et al., 1967). Hunt (1977) describes the role that coordination plays in the development of syntactic maturity:

> At the outset we noticed that our fourth-grader joined two pairs of T-units with and's. He did so with grammatical correctness. He put his and's in the right place, at the boundaries between the T-units. He knows where those boundaries come. But hereafter he will learn to do this less often. Young children do it correctly but profusely. Older writers do it correctly but parsimoniously. (p. 97)

Adverbial conjoining, too, was shown to be an unreliable index of maturity:

> Movable adverb clauses do seem to increase with maturity, but the ceiling is reached early, and after the middle grades the frequency of them tells more about mode of discourse and subject matter than about maturity. (Hunt, 1966, p. 734)

However, adjectival and nominal embeddings were found to be strong indicators of syntactic maturity. Hunt (1965) noted that these two types of sentence-combining operations increased dramatically in the writing of older students. Cooper (1973) summarizes Hunt's findings:

> Hunt's study of grammatical structures . . . leaves no doubt that critical factors in written language development are longer and more varied nominals (using noun phrases and clauses in place of simple-word nouns) and amount and depth of adjective modification of nouns. (p. 97)

Christensen (1966), however, challenged this view of maturity in writing, claiming that the use of elaborate nominals and lengthy clauses resulted in "a contorted academic prose" (p. 573). Moreover, Christensen noted that long clauses and complex nominals were difficult to read:

> A mature style must say much in little, agreed, but a mature style must be easy to decode . . .. The real problem in writing is to reconcile these two seeming opposites--to pack much into little, but to pack it so that it can be readily unpacked. (p. 576)

Christensen claimed that the use of "free modifiers" was a more valid index of maturity in writing. These modifiers include nonrestrictive relative clauses, prepositional and participial phrases. appositives, and absolutes. According to Christensen. contemporary prose writers typically use these modifiers in sentence-final position--in effect, adding the modifiers to the end of their base clauses rather than embedding them within the clauses. Christensen called these constructions "cumulative" sentences and claimed that they were the hallmark of mature prose. The following sentence, written by Ernest Hemingway, exemplifies the cumulative sentence--a short base clause followed by a series of loosely connected free modifiers:

> The gypsy was walking out toward the bull again, walking heel-and-toe, insultingly, like a ball-room dancer, the red shafts of the banderillos twitching with his walk. (Christensen, 1967, p. 35)

Other authorities, though, suggested that Christensen's definition of a "mature style" was far too restrictive (Mellon, 1969: Johnson, 1969). Cooper (1973) points out that Christensen's theory does not necessarily conflict with Hunt's (1965) findings:

> The cumulative sentence with its final free modifiers is very common in modern prose, but it has not replaced the embedded sentence, an impression one can get on reading Christensen. Embeddings and accumulations can occur in the same sentences, of course. The fact remains that mature syntax is characterized in large part by amount and depth of embedding, and this is a developmental task the child must master. (p. 98, emphasis in original text)

Winterowd (1975) also stresses the importance of embedding operations:

> Nor is the creation of meaning through embedding operations a trivial quality, but rather one of the great creative powers that the language confers upon its users; the power to express relationships through a finite series of recursive devices. (p. 29)

It would seem logical, then, that sentence-combining instruction should emphasize the use of those operations that are most indicative of mature syntax (as defined by both Hunt and Christensen), i.e., adjectival embedding, nominal embedding, and free modification. Nevertheless, experimental sentence-combining curricula and published sentence-combining textbooks have typically included all types of combining operations, including those that are not generally associated with syntactic maturity (e.g., coordinate conjoining). (A rationale for including such "immature" operations is provided below in the discussion of the sequence for instruction.) Sentence-combining programs have traditionally included the following content*:

I. Coordinate conjoining
II. Adverbial conjoining
    A. Adverbial clauses
    B. Adverbial phrases
III. Restrictive adjectival embedding
    A. Adjective clauses
    B. Adjective phrases
    C. Single-word adjectives
IV. Nominal embedding
    A. Noun clauses
        1. Factive clauses
        2. Interrogative clauses
    B. Noun phrases
        1. Gerunds
        2. Infinitives
        3. Derived nouns
V. Free modifiers
    A. Nonrestrictive adjective clauses
    B. Modifying phrases

SEQUENCE FOR SENTENCE-COMBINING INSTRUCTION**

Sentence combining is based on the assumption that by the time students enter school, they are capable of performing in their speech most of the syntactic manipulations required by their language. Moreover, the studies by Hunt (1965) and O'Donnell et al. (1967) showed that even very young writers were able to produce complex syntactic structures in their writing. Thus what differentiates older writers from younger writers is not the kind of structures they use, but the frequency with which they use certain structures.

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*Detailed specifications for this content can be found in the attachment to this paper.

**See Appendix E of this report for additional discussion of sequencing.

This underlying assumption about students' linguistic competence may help to explain why there is little agreement among authorities on the appropriate sequence for sentence-combining instruction. If students already know how to orally perform the various conjoining and embedding operations, then it would not seem too important how these operations were presented in instruction. That is, students are not likely to find one sentence-combining operation more "difficult" than another, at least from a linguistic point of view.

Obviously, though, sentence-combining lessons must be presented in some kind of sequence. However, the literature provides little support for using any particular sequence. For example, in two fourth-grade sentence-combining programs (Hunt and O'Donnell, 1970; Perron, 1974), instruction begins with relative-clause embeddings and moves on to reduced-clause relative structures. At this point, Hunt and O'Donnell continue with coordinate sentence elements, factive noun clauses (with the expletive _it_ inversion), and question transformations. Perron, however, includes (in order) factive noun clauses, coordinate predicate phrases, and interrogative noun clauses. Both programs conclude with several lessons on movable adverbial clauses.

In a seventh-grade sentence-combining study, Mellon (1969) presents a sequence that is very different from the two fourth-grade programs. Mellon's instruction begins with question transformations and other single-sentence operations (e.g., passive transformations). Next, he introduces nominal embeddings, including factive and interrogative noun clauses, _it_ inversion, infinitives, gerunds, and derived nouns. The program then continues with relative-clause embeddings, participial phrases, infinitives (as adjectival modifiers), appositives, and, finally, pre-nominal adjectives and participles.*

In another seventh-grade study, O'Hare (1973) generally follows Mellon's sequence for instruction. However, in his sentence-combining textbook, _Sentencecraft_, O'Hare (1975) makes two changes in the content and sequence of his program. First, he includes a brief introductory lesson on coordinate predicate phrases and coordinate free modifiers. The purpose of this lesson seems to be to acquaint students with the concept of sentence combining and to provide some preliminary practice with the signaling system. Second, O'Hare includes adverbial clauses and phrasal adverbial modifiers in the final chapters of his text. Most of these adverbials are free modifiers, and the exercises include many cumulative sentences.

Cooper (1973) recommends still another sequence for sentence-combining instruction. He begins with pre-nominal adjectives, participles, and compound adjectives. Next he introduces post-nominal prepositional phrases, appositives, participial phrases, and infinitives. Unlike other authorities, Cooper introduces full relative clauses after the reduced-clause adjectival modifiers. His outline for instruction then moves on to factive and interrogative noun clauses, gerunds, and infinitives.

---

*Mellon (1969, p. 81) points out that he had intended to include free modifiers in the projected second year of his sentence-combining program. However, this phase of the study was never completed.

Despite this wide disparity of opinion among sentence-combining authorities, some suggestions for sequencing instruction can be drawn from the literature. Perhaps the most important of these suggestions is that the sequence for sentence-combining instruction may be constrained more by practical considerations (e.g., teaching the system of sentence-combining signals) than by linguistic content.*

Thus the instructional sequence outlined in the appendix to this paper is based largely on the need to provide a practical, systematic introduction to the concept of sentence combining and to the signals used to control the various combining operations. The introductory lessons focus on the relatively simple operations of coordinate conjoining and adverbial-clause conjoining--operations that require minimal changes in word order and that should be familiar to most students. Since the content of these lessons is fairly "simple," instruction can focus on the use of the sentence-combining signals themselves.

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*However, a recent study by Kleen (1981) indicates that the field of developmental psycholinguistics can provide insights into the appropriate sequence for sentence-combining instruction. Kleen also suggests that such insights have been largely ignored in published sentence-combining textbooks. (However, the complete text of Kleen's study was not available at the time this paper was prepared.)

Students are next introduced to adjectival embeddings. The order of presentation is as follows: restrictive relative clauses, phrasal adjectivals, and single-word adjectivals. Most sentence-combining programs have followed this sequence, introducing full-clause embeddings first, followed by the reduced-clause structures that are derived from full clauses. Although such a sequence seems logical, there is little empirical evidence supporting this order of presentation. (Sentence-combining studies have traditionally examined the effects of sentence-combining instruction versus no sentence-combining instruction. Few studies have investigated the differences between or among various types of sentence-combining treatments.) Consequently, this instructional sequence (i.e., clause → phrase → word) should be regarded as tentative. Additional research and classroom experience may suggest a more appropriate order of presentation.

Nominal embeddings are introduced next in the instructional sequence. Again, full clauses are listed first, followed by phrases and single words. Although the signals for full-clause nominal embeddings are relatively straightforward, the signals for reduced-clause nominals are more complex because they require changes in word forms as well as in word order; e.g.:

$$\left.\begin{array}{l}\text{SOMETHING is off-key.}\\ \text{Jim sings. ('S + ING)}\end{array}\right\rangle \text{Jim's singing is off-key.}$$

SOMETHING alarmed the community.
The mayor disappeared. (DISAPPEARANCE + OF)
> The disappearance of the mayor alarmed the community.

Consequently, there is some justification for including reduced-clause nominal embeddings later in the instructional sequence.

The final section of the instructional specifications covers free modifiers and cumulative sentences. These structures include appositives, participial phrases, absolutes, nonrestrictive adjective clauses, and adjective clusters.

DESIGN OF SENTENCE-COMBINING INSTRUCTION

The specifications listed in the appendix to this paper provide a broad overview of the scope and sequence for sentence-combining instruction. However, several additional factors must be considered in the actual design of instruction.

Grade Levels

Which sentence-combining operations are appropriate for particular grade levels? Research has shown that fourth-grade students are able to handle coordinate and adverbial conjoining, adjectival embedding, and some nominal embedding (e.g., Perron, 1974; Miller and Ney, 1968). However, the complexity of some of the nominal-embedding signals may limit their usefulness with elementary students.

Young students are also likely to have difficulty using free modifiers, not because the combining signals are complex, but because of certain cognitive constraints. Mellon (1979) has pointed out that free modifiers are essentially "surface-structure maneuvers unique to particular languages, that occur mostly in writing and clearly are learned only through experience with the written language" (p. 20). In order to use such structures, Mellon claims, students must be mature enough to view their writing as a "craftable artifact" (p. 21). Young writers, though, have had limited experience with the written language, and they generally have not reached the stage of cognitive development where they are able to view their writing as an entity separate from themselves, i.e., an entity that can be consciously manipulated. According to Mellon, it is not until the junior high years that students are likely to have the experience and cognitive skills necessary to make use of free modifiers in their writing. Consequently, the teaching of such structures is probably not suited to the elementary grades.

Thus sentence-combining instruction at the elementary level should probably be limited to coordinate conjoining, adverbial clause conjoining, adjectival embedding, and noun-clause embedding. Junior high and secondary programs can include all of the above plus reduced-clause nominal embedding and free modification. However, sentence-combining instruction should be flexible enough to account for differences in students' abilities within these levels.

Grammar versus No Grammar

Although Mellon's pioneering research (1969) included sentence combining within the framework of a transformational grammar class, subsequent research has shown that sentence combining is in no way dependent upon formal grammar study. O'Hare (1973) developed a system of sentence-combining signals that completely eliminated the need for grammatical terminology. In discussing the advantages of his signaling system, O'Hare (1973) notes that

> The attractiveness of the sentence-combining signals . . . lies in their simplicity, their consistency, their flexibility, and their practicality . . .. The elimination of the study of transformational grammar and of transformational nomenclature makes all of this possible. With the threat of grammatical failure removed, the developing writer can get on with solving sentence-structure problems and confidently face the real issue--that of blending form and idea in any given rhetorical situation. (p. 76)

Research has consistently shown that formal grammar study does not improve written composition skills (e.g., Harris, 1962; Elley, Barham, Lamb, and Wyllie, 1976). Despite these findings, some instructional designers insist on including grammar study (and/or grammatical terminology) in sentence-combining instruction (Bivens and Edwards, 1974; Klein, 1976; Wisconsin Writing Project, 1978; Ney, 1976). However, the justification for including grammar study in sentence-combining programs seems tenuous, at best. The purpose of sentence combining is to improve writing skills. The purpose of formal grammar study, though, seems to be quite different, as even the Wisconsin Writing Project (1978) admits:

> We believe there are merits to the study of formal grammar: development of critical thinking skills, acquisition of a common descriptive tool, awareness of the uniqueness of human expression. (p. 6)

Even if one were to grant that grammar study does indeed produce the effects noted above, the fact remains that formal grammar study has little or no effect on improving students' sentence structure. Consequently, the instructional specifications listed in this paper do not include a grammar-study component. The grammatical terms used in the appendix are not intended to be part of the instructional program; they are used for identification purposes only.

Exercise Formats

Most authorities recommend that both signaled and unsignaled sentence-combining exercises be included in instruction. Signaled exercises can provide focused practice on particular syntactic operations. Unsignaled exercises allow students to experiment with various combining strategies, selecting the one combination that seems to work best. Comparison of a variety of student responses to unsignaled exercises can lead to profitable discussions of the rhetorical effects of different combinations. Mellon (1979) recommends a ratio of one unsignaled exercise for every four signaled exercises.

Sentence-combining instruction should also provide many opportunities for review, preferably with multiple-sentence exercises. Such exercises can include paragraph-length blocks similar to those developed by Strong (1973).*

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*See Lawlor, Cronnell, Humes, and Gentry (1981) for a review of Strong's sentence-combining textbook.

Readability

Some authorities have expressed concern about the effect of sentence combining on the readability of students' writing (e.g., Kinneavy, 1979). Caution is certainly warranted, because lengthy, heavily embedded clauses can adversely affect the readability of a text. However, the ultimate goal of sentence combining is not to force students into writing unnecessarily elaborate sentences--sentences that Kinneavy has called "stylistic monsters" (1979, p. 71). Rather, the purpose of sentence-combining instruction is to expand students' repertoire of syntactic options by showing them different ways of expressing ideas. The ultimate choice for selecting one particular option must certainly be governed by considerations other than sentence length. Hunt (1979) describes a sentence-combining program that he designed:

> Each exercise was a problem in how to express some prescribed thought in the best way, that is, using the best sentence structure. It was not an exercise in writing the longest T-units but the best ones. (p. 155)

Sentence combining can also ameliorate readability problems by providing practice with syntactic operations that improve the readability of written text (e.g., it inversion, free modification). Moreover, by comparing various responses to unsignaled sentence-combining exercises, students can learn to apply the principles for writing readable prose.

Sentence Combining and Writing Instruction

Several researchers have suggested that sentence combining can comprise an entire writing course (e.g., Daiker, Kerek, and Morenberg, 1978; Hunt, 1979). However, most authorities believe that sentence combining should only serve as one part of the total writing curriculum (e.g., Mellon, 1979; O'Hare, 1973; Strong, 1979). This latter view seems the more reasonable one, since the composing process involves much more than simply constructing sentences. Composition instruction must deal with all aspects of writing, such as defining audience and purpose, and generating content.* Sentence combining provides little or no assistance in these areas. O'Hare (1973) acknowledges the limits of sentence-combining instruction:

> Although this researcher has rather strenuously urged that more attention be paid to the syntactic manipulative skill and for a more important place for "style as syntax" in the curriculum, he is merely suggesting a possible new emphasis in rhetorical instruction and is in no sense denying or even questioning the importance of the other members of the classical rhetorician's tripod, invention and arrangement. (p. 76)

Strong (1979) recognizes similar limitations when he recommends that sentence combining be used "as a skill-building adjunct to a writing program--not as an exclusive approach in and of itself" (p. 215).

Nevertheless, there is some debate among authorities on the optimum amount of time that should be devoted to sentence-combining instruction. Mellon (1975) reports that 50 minutes of class time per week was adequate in his seventh-grade curriculum (p. 26). He further recommends a regimen of "two cued problems daily on average, and two whole-discourse exercises per week" (p.33). O'Hare (1973) included approximately 75 minutes of instruction per week in his seventh-grade program, supplemented by 30 minutes of homework weekly (pp. 42-3). Perron (1974) allocated two hours per week to sentence combining in his fourth-grade curriculum (p. 89). However, Lomax (1980) suggests that as little as "five or ten minutes of work three times a week" (p. 18) is sufficient. Thus it seems clear that the time spent on sentence combining will vary according to the preferences of individual teachers, the age and ability of the students, and the demands of individual writing programs. Thirty minutes of instructional time per week would seem to be the minimum amount that should be devoted to sentence combining, with 90 minutes per week representing the maximum. Given these parameters, sentence-combining instruction still represents a modest investment of time, considering the benefits that students are likely to gain.

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*Humes (1980) provides detailed specifications for composition instruction.

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ATTACHMENT

SENTENCE COMBINING: INSTRUCTIONAL SPECIFICATIONS

Unit 1: Introduction to Sentence Combining

Lesson 1: Coordination within Sentences*

a. coordinate predicate phrases

Terry jumped for the ball. Terry missed it. (AND)	Terry jumped for the ball and missed it.

b. coordinate direct objects and predicate nominatives

I ate a sandwich. I ate a banana. (AND)	I ate a sandwich and a banana.
She is a good student. She is a talented athlete. (AND)	She is a good student and a talented athlete.

c. coordinate adverbs and predicate adjectives

Tom spoke clearly. Tom spoke calmly. (AND)	Tom spoke clearly and calmly.
The weather was cold. The weather was windy. (AND)	The weather was cold and windy.

d. review: include all of the above in two-sentence exercises; introduce multiple-sentence exercises

Jack bought ice cream. Jack bought cake. Jack bought cookies. (AND)	Jack bought ice cream, cake, and cookies.

Lesson 2: Movable Adverbial Clauses

a. time clauses in final position

We watched television. We had finished our homework. (AFTER)	We watched television after we had finished our homework.

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*The grammatical terms appearing in these specifications should not be used with students. Sentence combining is not dependent upon formal grammar study.

b. other adverbial clauses in final position

We stopped for the night. We were tired. (BECAUSE)	>	We stopped for the night because we were tired.

c. adverbial clauses in initial position

You study hard for the test. (IF) You will pass it easily.	>	If you study hard for the test, you will pass it easily.

d. review: include coordinates and adverbial clauses in multiple-sentence exercises; introduce unsignaled exercises

Mary overslept this morning. She missed the bus. She had to walk to school.	>	Since Mary overslept this morning, she missed the bus and had to walk to school.

Unit 2: Adjectival Structures

Lesson 1: Adjectives and restrictive relative clauses

a. simple adjectives

A bird flew in the window. The bird was yellow.	A yellow bird flew in the window.

b. who and that clauses modifying objects; subject of the insert sentence is relativized*

We identified the burglar. The burglar stole the jewels. (WHO)	We identified the burglar who stole the jewels.
Gina caught a fish. The fish weighed five pounds. (THAT)	Gina caught a fish that weighed five pounds.

c. who and that clauses modifying subjects; subject of insert sentence is relativized

The boy was very happy. The boy won the prize. (WHO)	The boy who won the prize was very happy.
The team will be the state champion. The team wins this game. (THAT)	The team that wins this game will be the state champion.

d. that, whom, and deleted-pronoun clauses modifying subjects and objects; an object of the insert sentence is relativized

The movie was funny. We saw the movie. (THAT)	The movie that we saw was funny.
Jerry met a man. You admire the man. (WHOM)	Jerry met a man whom you admire.
The door is stuck again. You fixed the door. (JUST JOIN)	The door you fixed is stuck again.

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*In an oral comprehension study, Legum (1975) reports that kindergarten, first-, and second-grade students found clauses containing relativized subjects to be easier than clauses containing relativized objects. Thus there is some justification for sequencing relativized subjects before relativized objects. Such a sequence was successfully employed by Hunt and O'Donnell (1970) in a fourth-grade sentence-combining experiment.

e. review: include all of the above plus coordinates and adverbial clauses in multiple-sentence exercises, both signaled and unsignaled:

The game was over. (AS SOON AS) The fans ran up to the players. The fans had waited near the end zone. (WHO) The fans congratulated them. (AND)	As soon as the game was over, the fans who had waited near the end zone ran up to the players and congratulated them.

Lesson 2: Post-nominal phrasal modifiers

a. present and past participial phrases

The girl is my sister. The girl is standing on the porch.	The girl standing on the porch is my sister.
The houses are being repaired. The houses were damaged in the fire.	The houses damaged in the fire are being repaired.

b. prepositional phrases and infinitives

A woman walked through the door. The woman was in a uniform.	A woman in a uniform walked through the door.
The food was stolen. The food was to be given to the poor.	The food to be given to the poor was stolen.

c. restrictive appositives

My friend won the speech contest. My friend is Janice.	My friend Janice won the speech contest.

d. review: include all phrasal modifiers and relative clauses: multiple-sentence exercises, both signaled and unsignaled

Lesson 3: Pre-nominal modifiers

a. present participles

A road led to the cabin. The road was winding.	A winding road led to the cabin.

b. past participles

The boat drifted in the water. The boat had been abandoned.	The abandoned boat drifted in the water.

c. possessives

The bike is new. John owns the bike. ('S)	John's bike is new.

d. review: include all pre- and post-nominal relatives, as well as coordinates and adverbial clauses, in signaled and unsignaled exercises

Unit 3: Nominal Structures

Lesson 1: Factive noun clauses

a. *that* clauses as objects

We knew SOMETHING. We would win. (THAT)	We knew that we would win.

b. deleted-*that* clauses as objects

John said SOMETHING. He doesn't feel well. (JUST JOIN)	John said he doesn't feel well.

c. *the fact that* clauses as subjects

SOMETHING worries me. We are almost out of time (THE FACT THAT)	The fact that we are almost out of time worries me.

d. review: include all factive noun clauses and structures that have been introduced previously; signaled multiple-sentence exercises

Lesson 2: Interrogative noun clauses and "it" inversion

a. *wh*-word clauses

SOMETHING is a mystery. The pirate hid the treasure somewhere. (WHERE)	Where the pirate hid the treasure is a mystery.

b. *how* + adjective/adverb clauses

We don't know SOMETHING. The crater is so deep. (HOW DEEP)	We don't know how deep the crater is.

c. *it* inversion with factive and interrogative clauses

SOMETHING upset her. He was late. (IT . . . THAT)	It upset her that he was late.
SOMETHING isn't clear. We should do something with the money. (IT . . . WHAT)	It isn't clear what we should do with the money.

d. review: emphasize noun-clause embeddings and *it* inversion in signaled and unsignaled multiple-sentence exercises

Lesson 3: Gerundive near-clause nominals

a. -ing phrases

Maria enjoys SOMETHING. Maria plays the piano. (ING)	>	Maria enjoys playing the piano.

b. possessive + -ing

SOMETHING is off-key David sings. ('S + ING)	>	David's singing is off-key.

c. -ing + of

SOMETHING woke her up. The alarm rang. (ING + OF)	>	The ringing of the alarm woke her up.
SOMETHING frightened the horses. The wolves howled mournfully. (~~LY~~ + ING + OF)	>	The mournful howling of the wolves frightened the horses.

d. review: include all gerundives in signaled, multiple-sentence exercises

Lesson 4: Infinitival near-clause nominals

a. infinitive phrases

SOMETHING would be a good idea. Someone leaves now. (TO)	>	To leave now would be a good idea.

b. wh-word + infinitive

SOMETHING was a problem. Someone gets spare parts somewhere (WHERE TO)	>	Where to get spare parts was a problem.

c. for + infinitive

SOMETHING would be disastrous. The plan fails. (FOR. . .TO)	>	For the plan to fail would be disastrous.

d. it inversion with infinitivals

SOMETHING will be difficult. We raise the money. (IT. . .FOR. . .TO)	>	It will be difficult for us to raise the money.

e. review: include all infinitivals and *it* inversion in signaled multiple-sentence exercises

Lesson 5: Derived-noun phrases

a. derived nouns

SOMETHING led to the company's bankruptcy. Someone mismanaged the company. (MISMANAGEMENT)	Mismanagement led to the company's bankruptcy.

b. possessive + derived noun

SOMETHING alarmed the town. The mayor disappeared. ('S + DISAPPEARANCE)	The mayor's disappearance alarmed the town.

c. derived noun + *of*

SOMETHING was brief. The new tax was discussed. (DISCUSSION + OF)	The discussion of the new tax was brief.

d. possessive + derived noun + *of*

The jury was impressed by SOMETHING The lawyer presented the case. ('S + PRESENTATION + OF)	The jury was impressed by the lawyer's presentation of the case.

e. review: include noun clauses, gerundives, infinitivals, derived nouns, and relative structures in multiple-sentence exercises, signaled and unsignaled

Unit 4: Free Modifiers

Lesson 1: Phrasal adverbials

a. *with* phrases

He was a tall boy. He had long, thin legs. (WITH)	He was a tall boy, with long, thin legs.

b. present participial phrases

Ted stood at the rail. Ted was *staring at the water*.	Ted stood at the rail, staring at the water.

c. past participial phrases

The boxer fell to his knees. The boxer had been *stunned by the punch*.	The boxer fell to his knees, stunned by the punch.

d. review: include phrasal modifiers in multiple-sentence exercises, both signaled and unsignaled

Lesson 2: Free modifiers and cumulative sentences

a. nominative absolutes

Paul stood in the doorway. *His hands* were *in his pockets*.	Paul stood in the doorway, his hands in his pockets.

b. non-restrictive relative clauses

We spoke to Ms. Jackson. Ms. Jackson has just returned from Europe. (WHO)	We spoke to Ms. Jackson, who has just returned from Europe.
She visited the town of Garmisch. Garmisch is located in the German Alps. (WHICH)	She visited the town of Garmisch, which is located in the German Alps.

c. nonrestrictive appositives

The guest speaker was Mr. Jones. Mr. Jones is *our new principal*.	The guest speaker was Mr Jones, our new principal.

d. adjective clusters

The mule refused to move. The mule was stubborn beyond belief.	The mule refused to move, stubborn beyond belief.

e. review: include extensive practice with cumulative sentences in multiple-sentence exercises; incorporate relative, nominal, and adverbial structures in signaled and unsignaled exercises.

Ray drove on.
He drove through the darkness.
The darkness was freezing.
His fingers were clutched tightly around the wheel. (,)
His eyes were fixed on the road ahead. (,)
He thought of SOMETHING. (AS)
He would say something. (WHAT)
He got home. (WHEN)

Ray drove on through the freezing darkness, his fingers clutched tightly around the wheel, his eyes fixed on the road ahead as he thought of what he would say when he got home.

THE SWRL SENTENCE-COMBINING PROGRAM

Jerry Bailey

The sentence-combining program on the following pages is a 12k machine-language program for the Apple with 48k of memory, a disk drive, and a Mountain Hardware clock. Four routines make up the bulk of the program: DISPLAY, INSTRUCTION, EDIT, and SCORE.

DISPLAY uses high resolution graphics to create both upper- and lower-case letters on the screen. The character shapes are defined in a table within the program. Because the screen is not mapped as a contiguous area of the hi-res memory, a moderately complex algorithm is required to place a character at a given column and row position on the screen. The characters are defined at memory locations \$0800-\$0AFA. DISPLAY resides at \$1CFB-\$205E.

INSTRUCTION shows the student how sentences are combined. This is done in a step-by-step manner using a pointer and flashing sentence elements to direct the student's attention to the proper place on the screen. INSTRUCTION is in memory locations \$30BA-\$3F72.

EDIT is used to place sequences of characters on the screen and to modify the characters. It automatically prevents words from being broken at the end of a line by removing the word fragment from the end of a line and placing the complete word on the next line. It allows for insertion, deletion, and overwriting of characters, and for left and right movement of the cursor. EDIT resides in locations \$205F-\$22CA.

SCORE examines the student's sentence to see if it is correct. When it detects errors in word count, missing initial capital letter, missing final period, missing "joiner," or certain spelling errors, it gives an appropriate message and asks the student to correct the error. It will even correct detected spelling errors for the student. SCORE is located at \$29A9-\$2F70.

The program will not function without a Mountain Hardware clock. Major program modifications would be required to eliminate the need for the clock.

```
99N

SOURCE FILE: MAIN1.ASM
SOURCE FILE: MAIN2.ASM
SOURCE FILE: MAIN3.ASM
SOURCE FILE: MAIN4.ASM
SOURCE FILE: MAIN5.ASM
SOURCE FILE: MAIN6.ASM
SOURCE FILE: MAIN7.ASM
SOURCE FILE: MAIN8.ASM
SOURCE FILE: MAIN9.ASM
SOURCE FILE: MAIN10.ASM
```

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```
MAIN1.ASM     SENTENCE COMBINING DEMONSTRATION   09-MAR-82 #000101 PAGE 1
0000:     ; DATA DEFINITION MODULE
0000:     ;
6000:     TXTBUF  EQU  $6000      ;START STRG SPACE
0000:     ;
03D6:     FILMGR  EQU  $03D6      ;DOS FILE MANAGER
03DC:     GETPRM  EQU  $03DC      ;LOCATE ADDR FILE MGR PARAM LIST
FBDD:     BELOUT  EQU  $FBDD      ;MONITOR "BELL" ROUTINE
0080:     TRUE    EQU  $80
0000:     FALSE   EQU  $00
0000:     ;
0000:     STUUNT  EQU  0
0001:     LSNUNT  EQU  1
0000:     ;
0001:     OPNCMD  EQU  01         ;OPEN CMD
0003:     RDCMD   EQU  03         ;READ CMD
000A:     POSCMD  EQU  10         ;POSITION CMD
0001:     ONEBYT  EQU  01         ;READ/WRITE 1 BYTE SUBCMD
00FF:     NOALLO  EQU  255        ;DON'T ALLOCATE NEW FILE
0005:     EOFERR  EQU  5          ;DOS EOF ERR CODE
0000:     ;
0014:     MAXCAP  EQU  20         ;MAX # CAPTION LINES/PART
000C:     MAXEXA  EQU  12         ;SAME, EXAMPLE SENTENCES (NOT ITEMS)
0030:     MAXPRA  EQU  48         ;SAME, PRACTICE SENTENCES
0005:     MAXSNT  EQU  5          ;MAX # SENTENCES IN ITEM
0004:     MAXCUE  EQU  4          ;MAX # CUES IN A SENTENCE
0004:     MAXADL  EQU  4          ;MAX # ADD'L TEXT STRINGS/SENTENCE
0000:     ;
0005:     CLKSLT  EQU  5          ;SLOT # OF CLOCK BOARD
C0D0:     CLOCK   EQU  16*CLKSLT+$C080
0000:     ;
0020:     LW      EQU  32         ;CURSOR POSITION VARIABLES
0021:     RW      EQU  33
0022:     TW      EQU  34
0023:     BW      EQU  35
0024:     HC      EQU  36
0025:     VC      EQU  37
0000:     ;
0001:     TXTTYP  EQU  1          ;WPEDIT CHAR TYPES
0002:     BAKARO  EQU  2
0003:     FWDARO  EQU  3
0004:     DELCHR  EQU  4
0005:     MODTGL  EQU  5
0006:     RETCHR  EQU  6
0007:     CASTGL  EQU  7
0008:     BADTYP  EQU  8
0000:     ;
0000:     ; WPEDIT EDIT MODES
0000:     OVRWRT  EQU  0          ;OVERWRITE (NORMAL) MODE
0001:     INSERT  EQU  1          ;INSERT MODE
0000:     ;
0000:     ; TERMINATION CODES
0005:     TYPDBY  EQU  5          ;TYPED 'BYE'
0006:     CRTMOU  EQU  6          ;DIDN'T TYPE CR SOON ENUF
0000:     ;
0000:     ; WORD BY WORD COMPARE ERROR TYPES
0000:     NOERR   EQU  0          ;NO ERROR
0001:     NONERR  EQU  1          ;NON-SPELLING ERROR
0002:     ERRSPL  EQU  2          ;SPELLING ERROR
```

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```
0000:              60 ;
----- NEXT OBJECT FILE NAME IS MAIN1.ASM.OBJ0
07FD:              61         ORG  2045
07FD:4C DD 15      62         JMP  COMBIN
0800:              63 ;
0800:              64 ; HI-RES CHAR SET DEF
0800:              65 ;
0800:00 00 00      66         DFB  0,0,0,0,0,0,0,0 ;' ' - MUST START AT 2048!
0803:00 00 00
0806:00 00
0808:08 08 08      67         DFB  8,8,8,8,8,0,8,0 ;!
080B:08 08 00
080E:08 00
0810:14 14 14      68         DFB  20,20,20,0,0,0,0,0 ;"
0813:00 00 00
0816:00 00
0818:7F 01 01      69         DFB  127,1,1,1,1,1,1,1 ;#
081B:01 01 01
081E:01 01
0820:01 01 01      70         DFB  1,1,1,1,1,1,1,1 ;$
0823:01 01 01
0826:01 01
0828:01 01 01      71         DFB  1,1,1,1,1,1,1,127 ;%
082B:01 01 01
082E:01 7F
0830:7F 00 00      72         DFB  127,0,0,0,0,0,0,0 ;&
0833:00 00 00
0836:00 00
0838:08 08 08      73         DFB  8,8,8,0,0,0,0,0 ;'
083B:00 00 00
083E:00 00
0840:10 08 04      74         DFB  16,8,4,4,4,8,16,0 ;(
0843:04 04 08
0846:10 00
0848:04 08 10      75         DFB  4,8,16,16,16,8,4,0 ;)
084B:10 10 08
084E:04 00
0850:7F 40 40      76         DFB  127,64,64,64,64,64,64,64 ;*
0853:40 40 40
0856:40 40
0858:40 40 40      77         DFB  64,64,64,64,64,64,64,127 ;+
085B:40 40 40
085E:40 7F
0860:00 00 00      78         DFB  0,0,0,0,0,8,8,4 ;,
0863:00 00 08
0866:08 04
0868:00 00 00      79         DFB  0,0,0,62,0,0,0,0 ;-
086B:3E 00 00
086E:00 00
0870:00 00 00      80         DFB  0,0,0,0,0,0,8,0 ;.
0873:00 00 00
0876:08 00
0878:40 40 40      81         DFB  64,64,64,64,64,64,64,64 ;/
087B:40 40 40
087E:40 40
0880:1C 22 32      82         DFB  28,34,50,42,38,34,28,0 ;0
0883:2A 26 22
0886:1C 00
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```
0888:08 0C 08   83          DFB  8,12,8,8,8,8,28,0 ;1
088B:08 08 08
088E:1C 00
0890:1C 22 20   84          DFB  28,34,32,24,4,2,62,0 ;2
0893:18 04 02
0896:3E 00
0898:3E 20 10   85          DFB  62,32,16,24,32,34,28,0 ;3
089B:18 20 22
089E:1C 00
08A0:10 18 14   86          DFB  16,24,20,18,62,16,16,0 ;4
08A3:12 3E 10
08A6:10 00
08A8:3E 02 1E   87          DFB  62,2,30,32,32,34,28,0 ;5
08AB:20 20 22
08AE:1C 00
08B0:38 04 02   88          DFB  56,4,2,30,34,34,28,0 ;6
08B3:1E 22 22
08B6:1C 00
08B8:3E 20 10   89          DFB  62,32,16,8,4,4,4,0 ;7
08BB:08 04 04
08BE:04 00
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08C3:1C 22 22
08C6:1C 00
08C8:1C 22 22   91          DFB  28,34,34,60,32,16,14,0 ;9
08CB:3C 20 10
08CE:0E 00
08D0:00 00 08   92          DFB  0,0,8,0,0,8,0,0 ;:
08D3:00 00 08
08D6:00 00
08D8:00 00 08   93          DFB  0,0,8,0,0,8,8,4 ;;
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08DE:08 04
08E0:20 10 08   94          DFB  32,16,8,4,8,16,32,0;<
08E3:04 08 10
08E6:20 00
08E8:00 00 00   95          DFB  0,0,0,0,0,0,0,127 ;=
08EB:00 00 00
08EE:00 7F
08F0:04 08 10   96          DFB  4,8,16,32,16,8,4,0 ;>
08F3:20 10 08
08F6:04 00
08F8:1C 22 10   97          DFB  28,34,16,8,8,0,8,0 ;?
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08FE:08 00
0900:1C 22 2A   98          DFB  28,34,42,58,26,2,60,0 ;@
0903:3A 1A 02
0906:3C 00
0908:08 14 22   99          DFB  8,20,34,34,62,34,34,0 ;A
090B:22 3E 22
090E:22 00
0910:1E 22 22   100         DFB  30,34,34,30,34,34,30,0 ;B
0913:1E 22 22
0916:1E 00
0918:1C 22 02   101         DFB  28,34,2,2,2,34,28,0 ;C
091B:02 02 22
091E:1C 00
0920:1E 22 22   102         DFB  30,34,34,34,34,34,30,0 ;D
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0923:22 22 22
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0928:3E 02 02  103         DFB  62,2,2,30,2,2,62,0 ;E
092B:1E 02 02
092E:3E 00
0930:3E 02 02  104         DFB  62,2,2,30,2,2,2,0 ;F
0933:1E 02 02
0936:02 00
0938:3C 02 02  105         DFB  60,2,2,2,50,34,60,0 ;G
093B:02 32 22
093E:3C 00
0940:22 22 22  106         DFB  34,34,34,62,34,34,34,0 ;H
0943:3E 22 22
0946:22 00
0948:1C 08 08  107         DFB  28,8,8,8,8,8,28,0 ;I
094B:08 08 08
094E:1C 00
0950:20 20 20  108         DFB  32,32,32,32,32,34,28,0 ;J
0953:20 20 22
0956:1C 00
0958:22 12 0A  109         DFB  34,18,10,6,10,18,34,0 ;K
095B:06 0A 12
095E:22 00
0960:02 02 02  110         DFB  2,2,2,2,2,2,62,0 ;L
0963:02 02 02
0966:3E 00
0968:22 36 2A  111         DFB  34,54,42,42,34,34,34,0 ;M
096B:2A 22 22
096E:22 00
0970:22 22 26  112         DFB  34,34,38,42,50,34,34,0 ;N
0973:2A 32 22
0976:22 00
0978:1C 22 22  113         DFB  28,34,34,34,34,34,28,0 ;O
097B:22 22 22
097E:1C 00
0980:1E 22 22  114         DFB  30,34,34,30,2,2,2,0 ;P
0983:1E 02 02
0986:02 00
0988:1C 22 22  115         DFB  28,34,34,34,42,18,44,0 ;Q
098B:22 2A 12
098E:2C 00
0990:1E 22 22  116         DFB  30,34,34,30,10,18,34,0 ;R
0993:1E 0A 12
0996:22 00
0998:1C 22 02  117         DFB  28,34,2,28,32,34,28,0 ;S
099B:1C 20 22
099E:1C 00
09A0:3E 08 08  118         DFB  62,8,8,8,8,8,8,0 ;T
09A3:08 08 08
09A6:08 00
09A8:22 22 22  119         DFB  34,34,34,34,34,34,28,0 ;U
09AB:22 22 22
09AE:1C 00
09B0:22 22 22  120         DFB  34,34,34,34,34,20,8,0 ;V
09B3:22 22 14
09B6:08 00
09B8:22 22 22  121         DFB  34,34,34,42,42,54,34,0 ;W
09BB:2A 2A 36
```

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```
09BE:22 00
09C0:22 22 14   122          DFB  34,34,20,8,20,34,34,0 ;X
09C3:08 14 22
09C6:22 00
09C8:22 22 14   123          DFB  34,34,20,8,8,8,8,0 ;Y
09CB:08 08 08
09CE:08 00
09D0:3E 20 10   124          DFB  62,32,16,8,4,2,62,0 ;Z
09D3:08 04 02
09D6:3E 00
09D8:3E 06 06   125          DFB  62,6,6,6,6,6,62,0 ;LT SQ BRKT
09DB:06 06 06
09DE:3E 00
09E0:00 02 04   126          DFB  0,2,4,8,16,32,0,0 ;BK SL
09E3:08 10 20
09E6:00 00
09E8:3E 30 30   127          DFB  62,48,48,48,48,48,62,0 ;RT SQ BRKT
09EB:30 30 30
09EE:3E 00
09F0:00 00 08   128          DFB  0,0,8,20,34,0,0,0 ;^
09F3:14 22 00
09F6:00 00
09F8:00 00 00   129          DFB  0,0,0,0,0,0,0,62 ;UL
09FB:00 00 00
09FE:00 3E
0A00:00 00 00   130          DFB  0,0,0,0,0,0,0,0 ;GRV ACC (UNUSED)
0A03:00 00 00
0A06:00 00
0A08:00 00 0E   131          DFB  0,0,14,16,30,18,60,0 ;LC A
0A0B:10 1E 12
0A0E:3C 00
0A10:02 02 0E   132          DFB  2,2,14,18,18,18,14,0 ;LC B
0A13:12 12 12
0A16:0E 00
0A18:00 00 3C   133          DFB  0,0,60,2,2,2,60,0 ;LC C
0A1B:02 02 02
0A1E:3C 00
0A20:20 20 3C   134          DFB  32,32,60,34,34,34,60,0 ;LC D
0A23:22 22 22
0A26:3C 00
0A28:00 00 1C   135          DFB  0,0,28,34,58,2,28,0 ;LC E
0A2B:22 3A 02
0A2E:1C 00
0A30:30 08 08   136          DFB  48,8,8,28,8,8,8,0 ;LC F
0A33:1C 08 08
0A36:08 00
0A38:00 00 3C   137          DFB  0,0,60,34,34,60,32,30 ;LC G
0A3B:22 22 3C
0A3E:20 1E
0A40:02 02 1E   138          DFB  2,2,30,34,34,34,34,0 ;LC H
0A43:22 22 22
0A46:22 00
0A48:08 00 08   139          DFB  8,0,8,8,8,8,8,0 ;LC I
0A4B:08 08 08
0A4E:08 00
0A50:00 20 00   140          DFB  0,32,0,32,32,32,34,28 ;LC J
0A53:20 20 20
0A56:22 1C
```

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```
0A58:02 12 0A  141        DFB  2,18,10,6,10,18,34,0 ;LC K
0A5B:06 0A 12
0A5E:22 00
0A60:0C 08 08  142        DFB  12,8,8,8,8,8,28,0 ;LC L
0A63:08 08 08
0A66:1C 00
0A68:00 00 16  143        DFB  0,0,22,42,42,42,42,0 ;LC M
0A6B:2A 2A 2A
0A6E:2A 00
0A70:00 00 1A  144        DFB  0,0,26,38,34,34,34,0 ;LC N
0A73:26 22 22
0A76:22 00
0A78:00 00 1C  145        DFB  0,0,28,34,34,34,28,0 ;LC O
0A7B:22 22 22
0A7E:1C 00
0A80:00 00 1E  146        DFB  0,0,30,34,34,30,2,2 ;LC P
0A83:22 22 1E
0A86:02 02
0A88:00 00 3C  147        DFB  0,0,60,34,34,60,32,32 ;LC Q
0A8B:22 22 3C
0A8E:20 20
0A90:00 00 3A  148        DFB  0,0,58,6,2,2,2,0 ;LC R
0A93:06 02 02
0A96:02 00
0A98:00 00 1C  149        DFB  0,0,28,2,28,32,30,0 ;LC S
0A9B:02 1C 20
0A9E:1E 00
0AA0:00 08 3E  150        DFB  0,8,62,8,8,8,8,0 ;LC T
0AA3:08 08 08
0AA6:08 00
0AA8:00 00 22  151        DFB  0,0,34,34,34,34,60,0 ;LC U
0AAB:22 22 22
0AAE:3C 00
0AB0:00 00 22  152        DFB  0,0,34,34,34,20,8,0 ;LC V
0AB3:22 22 14
0AB6:08 00
0AB8:00 00 22  153        DFB  0,0,34,42,42,54,34,0 ;LC W
0ABB:2A 2A 36
0ABE:22 00
0AC0:00 00 22  154        DFB  0,0,34,20,8,20,34,0 ;LC X
0AC3:14 08 14
0AC6:22 00
0AC8:00 00 22  155        DFB  0,0,34,34,34,60,32,30 ;LC Y
0ACB:22 22 3C
0ACE:20 1E
0AD0:00 00 3E  156        DFB  0,0,62,16,8,4,62,0 ;LC Z
0AD3:10 08 04
0AD6:3E 00
0AD8:10 08 08  157        DFB  16,8,8,4,8,8,16,0 ;LT CURLY BRKT
0ADB:04 08 08
0ADE:10 00
0AE0:08 08 08  158        DFB  8,8,8,8,8,8,8,8 ; VERT LINE
0AE3:08 08 08
0AE6:08 08
0AE8:04 08 08  159        DFB  4,8,8,16,8,8,4,0 ;RT CURLY BRKT
0AEB:10 08 08
0AEE:04 00
0AF0:00 00 00  160        DFB  0,0,0,32,26,2,0,0 ;TILDE
```

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```
MAIN1.ASM    SENTENCE COMBINING DEMONSTRATION    09-MAR-82 #000101 PAGE 7

0AF3:20 1C 02
0AF6:00 00
0AF8:04 08 10  161          DFB  4,8,16,32,16,8,4,0 ;RT PTD BRKT
0AFB:20 10 08
0AFE:04 00
0B00:7F 7F 7F  162          DFB  127,127,127,127,127,127,127,127 ;RUBOUT
0B03:7F 7F 7F
0B06:7F 7F
0B08:          163          MSB  OFF
0B08:04        164 PROMPT   DFB  4
0B09:2B        165          ASC  "+"
0B0A:00        166          DFB  0
0B0B:3F 20     167          ASC  "?     "
0B0D:2D        168 MSG1     DFB  45
0B0E:4E 6F 77  169          ASC  "Now       you can combine some sentences+yourself.+"
0B11:20 79 6F
0B14:75 20 63
0B17:61 6E 20
0B1A:63 6F 6D
0B1D:62 69 6E
0B20:65 20 73
0B23:6F 6D 65
0B26:20 73 65
0B29:6E 74 65
0B2C:6E 63 65
0B2F:73 2B 79
0B32:6F 75 72
0B35:73 65 6C
0B38:66 2E 2B
0B3B:51        170 MSG2     DFB  81
0B3C:46 6F 72  171          ASC  "For       each set of sentences,+take the time you need+"
0B3F:20 65 61
0B42:63 68 20
0B45:73 65 74
0B48:20 6F 66
0B4B:20 73 65
0B4E:6E 74 65
0B51:6E 63 65
0B54:73 2C 2B
0B57:74 61 6B
0B5A:65 20 74
0B5D:68 65 20
0B60:74 69 6D
0B63:65 20 79
0B66:6F 75 20
0B69:6E 65 65
0B6C:64 2B
0B6E:74 6F 20  172          ASC  "to        type your answer carefully.+"
0B71:74 79 70
0B74:65 20 79
0B77:6F 75 72
0B7A:20 61 6E
0B7D:73 77 65
0B80:72 20 63
0B83:61 72 65
0B86:66 75 6C
0B89:6C 79 2E
0B8C:2B
```

```
0B8D:4A          173 MSG3    DFB  74
0B8E:54 68 65    174         ASC  "Then     check+for spelling and typing errors+"
0B91:6E 20 63
0B94:68 65 63
0B97:6B 2B 66
0B9A:6F 72 20
0B9D:73 70 65
0BA0:6C 6C 69
0BA3:6E 67 20
0BA6:61 6E 64
0BA9:20 74 79
0BAC:70 69 6E
0BAF:67 20 65
0BB2:72 72 6F
0BB5:72 73 2B
0BB8:62 65 66    175         ASC  "before   you push the RETURN key.+"
0BBB:6F 72 65
0BBE:20 79 6F
0BC1:75 20 70
0BC4:75 73 68
0BC7:20 74 68
0BCA:65 20 52
0BCD:45 54 55
0BD0:52 4E 20
0BD3:6B 65 79
0BD6:2E 2B
0BD8:33          176 MSG4    DFB  51
0BD9:4E 6F 77    177         ASC  "Now      push RETURN to see+the first set of sentences.+"
0BDC:20 70 75
0BDF:73 68 20
0BE2:52 45 54
0BE5:55 52 4E
0BE8:20 74 6F
0BEB:20 73 65
0BEE:65 2B 74
0BF1:68 65 20
0BF4:66 69 72
0BF7:73 74 20
0BFA:73 65 74
0BFD:20 6F 66
0C00:20 73 65
0C03:6E 74 65
0C06:6E 63 65
0C09:73 2E 2B
0C0C:0F          178 MSG5    DFB  15
0C0D:2B 56 65    179         ASC  "+Very    good, "
0C10:72 79 20
0C13:67 6F 6F
0C16:64 2C 20
0C19:00          180         DFB  0
0C1A:2E 2B       181         ASC  ".+"
0C1C:57          182 MSG6    DFB  87
0C1D:49 20 77    183         ASC  "I        was looking for a different answer.++"
0C20:61 73 20
0C23:6C 6F 6F
0C26:6B 69 6E
0C29:67 20 66
0C2C:6F 72 20
```

```
0C2F:61 20 64
0C32:69 66 66
0C35:65 72 65
0C38:6E 74 20
0C3B:61 6E 73
0C3E:77 65 72
0C41:2E 2B 2B
0C44:54 68 69  184          ASC  "This     is a good way+to combine these sentences!++"
0C47:73 20 69
0C4A:73 20 61
0C4D:20 67 6F
0C50:6F 64 20
0C53:77 61 79
0C56:2B 74 6F
0C59:20 63 6F
0C5C:6D 62 69
0C5F:6E 65 20
0C62:74 68 65
0C65:73 65 20
0C68:73 65 6E
0C6B:74 65 6E
0C6E:63 65 73
0C71:3A 2B 2B
0C74:2C        185 MSG7     DFB  44
0C75:4E 6F 77  186          ASC  "Now     I think you are ready to try again. "
0C78:20 49 20
0C7B:74 68 69
0C7E:6E 6B 20
0C81:79 6F 75
0C84:20 61 72
0C87:65 20 72
0C8A:65 61 64
0C8D:79 20 74
0C90:6F 20 74
0C93:72 79 20
0C96:61 67 61
0C99:69 6E 2C
0C9C:20
0C9D:00        187          DFB  0
0C9E:2E 2B 2B  188          ASC  ".++"
0CA1:4F        189 MSG8     DFB  79
0CA2:52 69 67  190          ASC  "Right    again, "
0CA5:68 74 20
0CA8:61 67 61
0CAB:69 6E 2C
0CAE:20
0CAF:00        191          DFB  0
0CB0:2E 2B 4E  192          ASC  ".+Now    let's learn another way+to combine sentences.+"
0CB3:6F 77 20
0CB6:6C 65 74
0CB9:27 73 20
0CBC:6C 65 61
0CBF:72 6E 20
0CC2:61 6E 6F
0CC5:74 68 65
0CC8:72 20 77
0CCB:61 79 2B
0CCE:74 6F 20
```

```
0CD1:63 6F 6D
0CD4:62 69 6E
0CD7:65 20 73
0CDA:65 6E 74
0CDD:65 6E 63
0CE0:65 73 2E
0CE3:2B
0CE4:50 75 73  193          ASC  "Push     RETURN.+"
0CE7:68 20 52
0CEA:45 54 55
0CED:52 4E 2E
0CF0:2B
0CF1:6A        194 MSG9     DFB  106
0CF2:52 69 67  195          ASC  "Right    again!+You're doing very well, "
0CF5:68 74 20
0CF8:61 67 61
0CFB:69 6E 21
0CFE:2B 59 6F
0D01:75 27 72
0D04:65 20 64
0D07:6F 69 6E
0D0A:67 20 76
0D0D:65 72 79
0D10:20 77 65
0D13:6C 6C 2C
0D16:20
0D17:00        196          DFB  0
0D18:2E 2B 4E  197          ASC  ".+Now    you can start a new lesson+"
0D1B:6F 77 20
0D1E:79 6F 75
0D21:20 63 61
0D24:6E 20 73
0D27:74 61 72
0D2A:74 20 61
0D2D:20 6E 65
0D30:77 20 6C
0D33:65 73 73
0D36:6F 6E 2B
0D39:6F 6E 20  198          ASC  "on       sentence combining.+"
0D3C:73 65 6E
0D3F:74 65 6E
0D42:63 65 20
0D45:63 6F 6D
0D48:62 69 6E
0D4B:69 6E 67
0D4E:2E 2B
0D50:50 75 73  199          ASC  "Push     RETURN.+"
0D53:68 20 52
0D56:45 54 55
0D59:52 4E 2E
0D5C:2B
0D5D:2B        200 MSG10    DFB  43
0D5E:49 20 61  201          ASC  "I        am waiting for you to press RETURN. "
0D61:6D 20 77
0D64:61 69 74
0D67:69 6E 67
0D6A:20 66 6F
0D6D:72 20 79
```

```
0D70:6F 75 20
0D73:74 6F 20
0D76:70 72 65
0D79:73 73 20
0D7C:52 45 54
0D7F:55 52 4E
0D82:2C 20
0D84:00          202          DFB  0
0D85:2E 2B 2B    203          ASC  ".+++"
0D88:2B
0D89:2F          204 MSG11    DFB  47
0D8A:49 66 20    205          ASC  "If       you do not push RETURN,+"
0D8D:79 6F 75
0D90:20 64 6F
0D93:20 6E 6F
0D96:74 20 70
0D99:75 73 68
0D9C:20 52 45
0D9F:54 55 52
0DA2:4E 2C 2B
0DA5:49 20 6D    206          ASC  "I       must say goodbye.+"
0DA8:75 73 74
0DAB:20 73 61
0DAE:79 20 67
0DB1:6F 6F 64
0DB4:62 79 65
0DB7:2E 2B
0DB9:2E          207 MSG12    DFB  46
0DBA:50 72 65    208          ASC  "Press    RETURN to try another set of sentences.+"
0DBD:73 73 20
0DC0:52 45 54
0DC3:55 52 4E
0DC6:20 74 6F
0DC9:20 74 72
0DCC:79 20 61
0DCF:6E 6F 74
0DD2:68 65 72
0DD5:20 73 65
0DD8:74 20 6F
0DDB:66 20 73
0DDE:65 6E 74
0DE1:65 6E 63
0DE4:65 73 2E
0DE7:2B
0DE8:3B          209 MSG13    DFB  59
0DE9:2B 2B 4C    210          ASC  "++Let's  go over another example.+Press RETURN to continue.+"
0DEC:65 74 27
0DEF:73 20 67
0DF2:6F 20 6F
0DF5:76 65 72
0DF8:20 61 6E
0DFB:6F 74 68
0DFE:65 72 20
0E01:65 78 61
0E04:6D 70 6C
0E07:65 2E 2B
0E0A:50 72 65
0E0D:73 73 20
```

```
0E10:52 45 54
0E13:55 52 4E
0E16:20 74 6F
0E19:20 63 6F
0E1C:6E 74 69
0E1F:6E 75 65
0E22:2E 2B
0E24:1A          211 MSG14    DFB  26
0E25:54 68 65    212          ASC  "Then     push the return key.+"
0E28:6E 20 70
0E2B:75 73 68
0E2E:20 74 68
0E31:65 20 72
0E34:65 74 75
0E37:72 6E 20
0E3A:6B 65 79
0E3D:2E 2B
0E3F:2F          213 MSG15    DFB  47
0E40:2B 50 6C    214          ASC  "+Please  change the first letter+to a capital.++"
0E43:65 61 73
0E46:65 20 63
0E49:68 61 6E
0E4C:67 65 20
0E4F:74 68 65
0E52:20 66 69
0E55:72 73 74
0E58:20 6C 65
0E5B:74 74 65
0E5E:72 2B 74
0E61:6F 20 61
0E64:20 63 61
0E67:70 69 74
0E6A:61 6C 2E
0E6D:2B 2B
0E6F:32          215 MSG16    DFB  50
0E70:2B 50 6C    216          ASC  "+Please  add a period at the end+of the sentence.++"
0E73:65 61 73
0E76:65 20 61
0E79:64 64 20
0E7C:61 20 70
0E7F:65 72 69
0E82:6F 64 20
0E85:61 74 20
0E88:74 68 65
0E8B:20 65 6E
0E8E:64 2B 6F
0E91:66 20 74
0E94:68 65 20
0E97:73 65 6E
0E9A:74 65 6E
0E9D:63 65 2E
0EA0:2B 2B
0EA2:1C          217 MSG17    DFB  28
0EA3:2B 59 6F    218          ASC  "+Your    sentence should have '"
0EA6:75 72 20
0EA9:73 65 6E
0EAC:74 65 6E
0EAF:63 65 20
```

```
0EB2:73 68 6F
0EB5:75 6C 64
0EB8:20 68 61
0EBB:76 65 20
0EBE:27
0EBF:09          219 MSG18    DFB  9
0EC0:27 20 69    220          ASC  "'      in it.+"
0EC3:6E 20 69
0EC6:74 2E 2B
0EC9:0D          221 MSG19    DFB  13
0ECA:2B 50 6C    222          ASC  "+Please  add '"
0ECD:65 61 73
0ED0:65 20 61
0ED3:64 64 20
0ED6:27
0ED7:19          223 MSG20    DFB  25
0ED8:27 20 69    224          ASC  "'      in the correct place.++"
0EDB:6E 20 74
0EDE:68 65 20
0EE1:63 6F 72
0EE4:72 65 63
0EE7:74 20 70
0EEA:6C 61 63
0EED:65 2E 2B
0EF0:2B
0EF1:27          225 MSG21    DFB  39
0EF2:2B 49 20    226          ASC  "+I      am having trouble with your answer.+"
0EF5:61 6D 20
0EF8:68 61 76
0EFB:69 6E 67
0EFE:20 74 72
0F01:6F 75 62
0F04:6C 65 20
0F07:77 69 74
0F0A:68 20 79
0F0D:6F 75 72
0F10:20 61 6E
0F13:73 77 65
0F16:72 2E 2B
0F19:28          227 MSG22    DFB  40
0F1A:2B 48 61    228          ASC  "+Have    you left out any spaces or+words?+"
0F1D:76 65 20
0F20:79 6F 75
0F23:20 6C 65
0F26:66 74 20
0F29:6F 75 74
0F2C:20 61 6E
0F2F:79 20 73
0F32:70 61 63
0F35:65 73 20
0F38:6F 72 2B
0F3B:77 6F 72
0F3E:64 73 3F
0F41:2B
0F42:1B          229 MSG23    DFB  27
0F43:2B 50 6C    230          ASC  "+Please  fix your sentence.+"
0F46:65 61 73
0F49:65 20 66
```

```
0F4C:69 78 20
0F4F:79 6F 75
0F52:72 20 73
0F55:65 6E 74
0F58:65 6E 63
0F5B:65 2E 2B
0F5E:22           231 MSG024   DFB  34
0F5F:2B 48 61     232          ASC  "+Have    you put in any extra words?+"
0F62:76 65 20
0F65:79 6F 75
0F68:20 70 75
0F6B:74 20 69
0F6E:6E 20 61
0F71:6E 79 20
0F74:65 78 74
0F77:72 61 20
0F7A:77 6F 72
0F7D:64 73 3F
0F80:2B
0F81:22           233 MSG025   DFB  34
0F82:2B 41 72     234          ASC  "+Are     you sure you meant to write '"
0F85:65 20 79
0F88:6F 75 20
0F8B:73 75 72
0F8E:65 20 79
0F91:6F 75 20
0F94:6D 65 61
0F97:6E 74 20
0F9A:74 6F 20
0F9D:77 72 69
0FA0:74 65 20
0FA3:27
0FA4:23           235 MSG026   DFB  35
0FA5:27 3F 2B     236          ASC  "'?++Check the sentences at the top+"
0FA8:2B 43 68
0FAB:65 63 6B
0FAE:20 74 68
0FB1:65 20 73
0FB4:65 6E 74
0FB7:65 6E 63
0FBA:65 73 20
0FBD:61 74 20
0FC0:74 68 65
0FC3:20 74 6F
0FC6:70 2B
0FC8:27           237 MSG027   DFB  39
0FC9:66 6F 72     238          ASC  "for      the correct way to write+the word.+"
0FCC:20 74 68
0FCF:65 20 63
0FD2:6F 72 72
0FD5:65 63 74
0FD8:20 77 61
0FDB:79 20 74
0FDE:6F 20 77
0FE1:72 69 74
0FE4:65 2B 74
0FE7:68 65 20
0FEA:77 6F 72
```

```
0FED:64 2E 2B
0FF0:16          239 MSG28    DFB  22
0FF1:2B 50 6C    240          ASC  "+Please  fix the word.+"
0FF4:65 61 73
0FF7:65 20 66
0FFA:69 78 20
0FFD:74 68 65
1000:20 77 6F
1003:72 64 2E
1006:2B
1007:1D          241 MSG29    DFB  29
1008:2B 49 20    242          ASC  "+I       think you meant to write ´"
100B:74 68 69
100E:6E 6B 20
1011:79 6F 75
1014:20 6D 65
1017:61 6E 74
101A:20 74 6F
101D:20 77 72
1020:69 74 65
1023:20 27
1025:37          243 MSG30    DFB  55
1026:27 2E 2B    244          ASC  "´.++To   correct your answer.+Just press the RETURN key.+"
1029:2B 54 6F
102C:20 63 6F
102F:72 72 65
1032:63 74 20
1035:79 6F 75
1038:72 20 61
103B:6E 73 77
103E:65 72 2C
1041:2B 6A 75
1044:73 74 20
1047:70 72 65
104A:73 73 20
104D:74 68 65
1050:20 52 45
1053:54 55 52
1056:4E 20 6B
1059:65 79 2E
105C:2B
105D:18          245 MSG31    DFB  24
105E:2B 2B 2B    246          ASC  "+++I´m   sorry.  Goodbye.+"
1061:49 27 6D
1064:20 73 6F
1067:72 72 79
106A:2E 20 20
106D:47 6F 6F
1070:64 62 79
1073:65 2E 2B
1076:            247 ;
1076:            248 SAVESP   DS   1          ;SAVE INIT VAL STACK POINTER
1077:            249 GOTLSN   DS   1          ;LESSON LOADED OK FLAG
1078:            250 GOTPRT   DS   1          ;PART LOADED OK FLAG
1079:            251 LESSON   DS   1          ;LESSON IN USE (1-99,DEC)
107A:            252 LSNMEM   DS   1          ;LESSON IN MEMORY (DEC)
107B:            253 NUMLNS   DS   1
107C:            254 PART     DS   1          ;PART IN USE (A-Z,65-90)
```

```
MAIN1.ASM       SENTENCE COMBINING DEMONSTRATION    09-MAR-82 #000101 PAGE 16

107D:          255 LASPRT  DS   1          ;LAST PART IN CURRENT LESSON ('E' IF 5 PARTS)
107E:          256 PTRPTR  DS   1          ;INDEX INTO PTRTXT ARRAY
107F:          257 CUREXA  DS   1
1080:          258 CURPRA  DS   1
1081:          259 NRIGHT  DS   1
1082:          260 NERRS   DS   1
1083:          261 EDTBTM  DS   1
1084:          262 CUELEN  DS   1
1085:          263 PRANDX  DS   1
1086:          264 ;
1086:          265 CAPPTR  DS   52         ;BYTE PTR TO CAPTION TEXT, EACH PART
10BA:          266 EXAPTR  DS   52         ;SAME, EXAMPLE TEXT
10EE:          267 PRAPTR  DS   52         ;SAME, PRACTICE TEXT
1122:          268 CAPLNS  DS   26         ;NUMBER CAPTION LINES, EACH PART
113C:          269 EXALNS  DS   26         ;SAME, EXAMPLE LINES
1156:          270 PRALNS  DS   26         ;SAME, PRACTICE LINES
1170:          271 EXAITM  DS   26         ;NUMBER EXAMPLE ITEMS, EACH PART
118A:          272 PRAITM  DS   26         ;SAME, PRACTICE
11A4:          273 ;
11A4:          274 ; STRG VAR PTRS ---
11A4:          275 ;
11A4:          276 ;
11A4:          277 CAPTXT  DS   3*MAXCAP   ;CAPTION LINE STRG PTRS
11E0:          278 EXATXT  DS   3*MAXEXA   ;SAME, EXAMPLE TEXT
1204:          279 PRATXT  DS   3*MAXPRA   ;SAME, PRACTICE TEXT
1294:          280 PTRTXT  DS   3*8        ;TEXT FORM OF PTRS FOR PART
12AC:          281 STUTXT  DS   3*7
12C1:          282 MODEL   DS   3          ;MODEL SENTENCE FOR PRACTICE ROUTINE
12C4:          283 RESPNS  DS   3          ;KID'S RESPONSE IN PRACTICE RTN
12C7:          284 ITMTXT  DS   3*MAXSNT   ;DISPLAY FORM OF SENT'S IN AN ITEM
12D6:          285 CUETXT  DS   3*MAXCUE*MAXSNT ;TEXT OF CUES IN EACH SENT IN ITEM
1312:          286 ADLTXT  DS   3*MAXADL*MAXSNT ;ADD'L TEXT MAT'L IN EACH SENT IN ITEM
134E:          287 MODLWD  DS   3          ;USED FOR WD BY WD COMPARE OF SENT'S
1351:          288 RESPWD  DS   3          ;AS ABOVE
1354:          289 ;
1354:          290 ; STRG CONSTANTS
1354:          291 ;
1354:          292         MSB  ON
1354:          293 FILNMS  EQU  *
1354:D3 D4 D5  294 STUFIL  ASC  "STUDENT  DATA FILE
1357:C4 C5 CE
135A:D4 A0 C4
135D:C1 D4 C1
1360:A0 C6 C9
1363:CC C5 A0
1366:A0 A0 A0
1369:A0 A0 A0
136C:A0 A0 A0
136F:A0 A0 A0
1372:CC C5 D3  295 LSNFIL  ASC  "LESSON
1375:D3 CF CE
1378:A0 A0 A0
137B:A0 A0 A0
137E:A0 A0 A0
1381:A0 A0 A0
1384:A0 A0 A0
1387:A0 A0 A0
138A:A0 A0 A0
```

```
MAIN1.ASM      "" SENTENCE COMBINING DEMONSTRATION  -- 09-MAR-82 #000101 PAGE 17

138D:A0 A0 A0
1390:          296        MSB  OFF
1390:20 53 4F  297 SUMTHG ASC  "          SOMETHING "
1393:4D 45 54
1396:48 49 4E
1399:47 20
139B:4A 55 53  298 JUSJOI ASC  "JUST      JOIN"
139E:54 20 4A
13A1:4F 49 4E
13A4:42 59 45  299 BYE    ASC  "BYE"
13A7:          300 ;
13A7:          301 FNMLEN DS   1
13A8:          302 FSTNAM DS   20
13BC:          303 LNMLEN DS   1
13BD:          304 LSTNAM DS   20
13D1:          305 ;
13D1:          306 WRKBUF DS   4          ;DOS WORK AREA ADDR'S, UNITS 0 & 1
13D5:          307 TSLIST DS   4          ;SAME, TRACK/SECTOR LISTS
13D9:          308 DATBUF DS   4          ;SAME, DATA BUFFERS
13DD:          309 FILNAM EQU  *          ;SAME, FILENAME ADDR'S
13DD:54 13     310        DW   STUFIL
13DF:72 13     311        DW   LSNFIL
13E1:          312 DRIVE  EQU  *          ;SAME, DISK DRIVE
13E1:02        313        DFB  2
13E2:01        314        DFB  1
13E3:          315 SLOT   EQU  *          ;SAME, DISK CONTROLLER SLOT
13E3:06        316        DFB  6
13E4:06        317        DFB  6
13E5:          318 FILTYP EQU  *          ;SAME, FILE TYPE (BOTH TEXT)
13E5:00        319        DFB  $00
13E6:00        320        DFB  $00
13E7:          321 ;
13E7:          322 NEWRSP DS   1
13E8:          323 EDITY  DS   1
13E9:          324 EDTMOD DS   1
13EA:          325 CHAR   DS   1
13EB:          326 BOTBLK DS   1
13EC:          327 STSAVE DS   1
13ED:          328 HITEND DS   1
13EE:          329 OLDX   DS   1
13EF:          330 HITBGN DS   1
13F0:          331 LASCHR DS   1
13F1:          332 BUFLEN DS   1
13F2:          333 SCRBUF DS   241
14E3:          334 SCRCHR DS   1
14E4:          335 WRDLEN DS   1
14E5:          336 HITBOL DS   1
14E6:          337 CASFLG DS   1
14E7:          338 COUNT  DS   1
14E8:          339 NORMAL DS   1
14E9:          340 COUNT2 DS   1
14EA:          341 CHRTYP DS   1
14EB:          342 TYPRET DS   1
14EC:          343 STRPNO DS   1
14ED:          344 SAVCHR DS   1
14EE:          345 CLRBTM DS   1
14EF:          346 REASON DS   1
14F0:          347 NITEMS DS   1
```

```
14F1:                348 NSENTS   DS    1
14F2:                349 LASSNT   DS    1
14F3:                350 NCUES    DS    1
14F4:                351 NADDL    DS    1
14F5:                352 RMVON    DS    1
14F6:                353 WRKSPC   DS    2
14F8:                354 ;
14F8:                355 IMGLOC   EQU   *
14F8:00 04           356          DW    0+0+1024
14FA:80 04           357          DW    0+128+1024
14FC:00 05           358          DW    0+256+1024
14FE:80 05           359          DW    0+384+1024
1500:00 06           360          DW    0+512+1024
1502:80 06           361          DW    0+640+1024
1504:00 07           362          DW    0+768+1024
1506:80 07           363          DW    0+896+1024
1508:28 04           364          DW    40+0+1024
150A:A8 04           365          DW    40+128+1024
150C:28 05           366          DW    40+256+1024
150E:A8 05           367          DW    40+384+1024
1510:28 06           368          DW    40+512+1024
1512:A8 06           369          DW    40+640+1024
1514:28 07           370          DW    40+768+1024
1516:A8 07           371          DW    40+896+1024
1518:50 04           372          DW    80+0+1024
151A:D0 04           373          DW    80+128+1024
151C:50 05           374          DW    80+256+1024
151E:D0 05           375          DW    80+384+1024
1520:50 06           376          DW    80+512+1024
1522:D0 06           377          DW    80+640+1024
1524:50 07           378          DW    80+768+1024
1526:D0 07           379          DW    80+896+1024
1528:                380 ;
1528:                381 CHRCLS   EQU   *
1528:00 0C 00        382          DFB   0,12,0,0,0,0,0,0
152B:00 00 00
152E:00 00
1530:07 00 00        383          DFB   7,0,0,0,0,11,0,0
1533:00 00 0B
1536:00 00
1538:00 00 00        384          DFB   0,0,0,0,0,8,0,0
153B:00 00 08
153E:00 00
1540:00 00 00        385          DFB   0,0,0,0,0,0,0,0
1543:00 00 00
1546:00 00
1548:03 00 00        386          DFB   3,0,0,0,0,0,0,4
154B:00 00 00
154E:00 04
1550:00 00 00        387          DFB   0,0,0,0,5,0,6,0
1553:00 05 00
1556:06 00
1558:00 00 00        388          DFB   0,0,0,0,0,0,0,0
155B:00 00 00
155E:00 00
1560:00 00 00        389          DFB   0,0,0,0,9,0,0,0
1563:00 09 00
1566:00 00
```

```
1568:00 02 02  390          DFB  0,2,2,2,2,2,2,2
156B:02 02 02
156E:02 02
1570:02 02 02  391          DFB  2,2,2,2,2,2,2,2
1573:02 02 02
1576:02 02
1578:02 02 02  392          DFB  2,2,2,2,2,2,2,2
157B:02 02 02
157E:02 02
1580:02 02 02  393          DFB  2,2,2,0,0,0,10,0
1583:00 00 00
1586:0A 00
1588:00 01 01  394          DFB  0,1,1,1,1,1,1,1
158B:01 01 01
158E:01 01
1590:01 01 01  395          DFB  1,1,1,1,1,1,1,1
1593:01 01 01
1596:01 01
1598:01 01 01  396          DFB  1,1,1,1,1,1,1,1
159B:01 01 01
159E:01 01
15A0:01 01 01  397          DFB  1,1,1,0,0,0,0,0
15A3:00 00 00
15A6:00 00
15A8:          398 ;
15A8:          399 CLSTYP   EQU  *
15A8:00        400          DFB  BADTYP
15A9:01        401          DFB  TXTTYP
15AA:01        402          DFB  TXTTYP
15AB:01        403          DFB  TXTTYP
15AC:01        404          DFB  TXTTYP
15AD:01        405          DFB  TXTTYP
15AE:01        406          DFB  TXTTYP
15AF:02        407          DFB  BAKARO
15B0:03        408          DFB  FWDARO
15B1:04        409          DFB  DELCHR
15B2:05        410          DFB  MODTGL
15B3:06        411          DFB  RETCHR
15B4:07        412          DFB  CASTGL
15B5:          413 ;
15B5:          414 CURTIM   DS   4
15B9:          415 CHRTIM   DS   4
15BD:          416 TENMIN   DS   4
15C1:          417 TWEMIN   DS   4
15C5:          418 STRTTM   DS   4
15C9:          419 NSECS    DS   1
15CA:          420 NUMPTS   DS   1
15CB:          421 NXTTXT   DS   2
15CD:          422 BYTSRD   DS   1
15CE:          423 RESULT   DS   2
15D0:          424 NDOTS    DS   1
15D1:          425 DGTPTR   DS   1
15D2:          426 CUESTA   DS   1
15D3:          427 LENDIF   DS   1
15D4:          428 TYPERR   DS   1
15D5:          429 WRDCNT   DS   1
15D6:          430 CHRDIF   DS   1
15D7:          431 ENDSTR   DS   1
```

```
15D4:           428 TYPERR  DS    1
15D5:           429 WRDCNT  DS    1
15D6:           430 CHRDIF  DS    1
15D7:           431 ENDSTR  DS    1


MAIN1.ASM       SENTENCE COMBINING DEMONSTRATION    09-MAR-82 #000101 PAGE 20

15D8:           432 SCRCNT  DS    1
15D9:           433 DIFLOC  DS    1
15DA:           434 WRDNUM  DS    1
15DB:           435 LASEND  DS    1
15DC:           436 STRTWD  DS    1
15DD:           437         CHN   MAIN2.ASM
```

```
15DD:            ; CONTROL PROGRAM MODULE
15DD:            ;
15DD:            ;
15DD:BA          COMBIN  TSX                ;GET CURR VAL STACK POINTER
15DE:8E 76 10            STX   SAVESP
15E1:A9 00               LDA   #0           ;TRUE STARTING POINT
15E3:8D D5 C0            STA   CLOCK+5      ;START CLOCK
15E6:            ;
15E6:8D EF 14            STA   REASON       ;SET REASON FOR TERMINATION TO NONE
15E9:            ;
15E9:8D 7A 10            STA   LSNMEM       ;SHOW NO LESSON IN MEMORY
15EC:            ;
15EC:8D 50 C0            STA   $C050        ;GRAPHICS MODE
15EF:8D 52 C0            STA   $C052        ;FULL SCREEN
15F2:8D 55 C0            STA   $C055        ;PAGE 2
15F5:8D 57 C0            STA   $C057        ;HI-RES
15F8:20 7E 1F            JSR   CLRSCR
15FB:            ;
15FB:A9 BD               LDA   #>TENMIN
15FD:85 52               STA   $52
15FF:A9 15               LDA   #<TENMIN
1601:85 53               STA   $53
1603:20 6D 23            JSR   RDTIME
1606:            ;
1606:A5 52               LDA   $52
1608:85 50               STA   $50
160A:A5 53               LDA   $53
160C:85 51               STA   $51
160E:A9 C5               LDA   #>STRTIM
1610:85 52               STA   $52
1612:A9 15               LDA   #<STRTIM
1614:85 53               STA   $53
1616:A9 04               LDA   #4
1618:85 56               STA   $56
161A:20 21 23            JSR   MOVE
161D:            ;
161D:A9 C1               LDA   #>TWEMIN
161F:85 52               STA   $52
1621:A9 15               LDA   #<TWEMIN
1623:85 53               STA   $53
1625:20 21 23            JSR   MOVE
1628:            ;
1628:A9 00               LDA   #>20*60*16
162A:A2 4B               LDX   #<20*60*16
162C:20 95 23            JSR   ADDTIM
162F:            ;
162F:A9 BD               LDA   #>TENMIN
1631:85 52               STA   $52
1633:A9 15               LDA   #<TENMIN
1635:85 53               STA   $53
1637:A9 80               LDA   #>10*60*16
1639:A2 25               LDX   #<10*60*16
163B:20 95 23            JSR   ADDTIM
163E:            ;
163E:A9 03               LDA   #3           ;EXECUTE 'MAXFILES 3'
1640:85 44               STA   $44
1642:20 51 A2            JSR   $A251
1645:            ;
```

```
1645:A9 00     60        LDA  #STUUNT   ;SET UP STUDENT DATA FILE BUFFER
1647:20 74 1C  61        JSR  BUFSET
164A:          62 ;
164A:A9 01     63        LDA  #LSNUNT   ;SET UP LESSON FILE BUFFER
164C:20 74 1C  64        JSR  BUFSET
164F:          65 ;
164F:A2 00     66        LDX  #STUUNT   ;OPEN, POSITION STUDENT DATA FILE
1651:20 3E 1C  67        JSR  OPNSET
1654:90 03     68        BCC  *+5
1656:20 A2 2F  69        JSR  FATAL
1659:A2 FF     70        LDX  #NOALLO
165B:20 D6 03  71        JSR  FILMGR
165E:90 03     72        BCC  *+5
1660:20 A2 2F  73        JSR  FATAL
1663:20 FA 1B  74        JSR  POSSET+3
1666:A9 00     75        LDA  #0
1668:A0 04     76        LDY  #4
166A:91 50     77        STA  ($50),Y
166C:C8        78        INY
166D:91 50     79        STA  ($50),Y
166F:20 D6 03  80        JSR  FILMGR
1672:90 03     81        BCC  *+5
1674:20 A2 2F  82        JSR  FATAL
1677:20 AB 1B  83        JSR  RDSET+3
167A:A9 AC     84        LDA  #>STUTXT
167C:85 54     85        STA  $54
167E:A9 12     86        LDA  #<STUTXT
1680:85 55     87        STA  $55
1682:A0 00     88        LDY  #0
1684:A9 60     89        LDA  #<TXTBUF
1686:85 53     90        STA  $53
1688:A9 00     91        LDA  #>TXTBUF
168A:85 52     92        STA  $52
168C:          93 ;
168C:8C E7 14  94 STULP  STY  COUNT     ;READ STUDENT'S FIRST NAME,
168F:91 54     95        STA  ($54),Y   ;  LAST NAME, LESSON IN USE,
1691:A5 53     96        LDA  $53       ;  PART IN USE, LAST EXAMPLE DISPLAYED,
1693:C8        97        INY            ;  LAST PRAC ITEM DISPLAYED, NUMBER PRACTICE
1694:91 54     98        STA  ($54),Y   ;  ITEMS RIGHT LAST SESSION
1696:C8        99        INY
1697:8C E7 14 100        STY  COUNT
169A:20 B7 1B 101        JSR  RDDISK
169D:90 03    102        BCC  *+5
169F:20 A2 2F 103        JSR  FATAL
16A2:AD CB 15 104        LDA  BYTSRD
16A5:D0 03    105        BNE  *+5
16A7:20 A2 2F 106        JSR  FATAL
16AA:AC E7 14 107        LDY  COUNT
16AD:91 54    108        STA  ($54),Y
16AF:A5 52    109        LDA  $52
16B1:C8       110        INY
16B2:C0 15    111        CPY  #7*3
16B4:30 D6    112        BMI  STULP
16B6:         113 ;
16B6:A0 00    114        LDY  #0        ;1ST NAME
16B8:20 0F 23 115        JSR  PTRSET
16BB:A9 A0    116        LDA  #>FSTNAM
16BD:85 52    117        STA  $52
```

```
16BF:A9 13      118          LDA  #<FSTNAM
16C1:85 53      119          STA  $53
16C3:20 21 23   120          JSR  MOVE
16C6:A2 02      121          LDX  #2
16C8:BD AC 12   122          LDA  STUTXT,X
16CB:8D A7 13   123          STA  FNMLEN
16CE:           124 ;
16CE:A0 03      125          LDY  #3           ;LAST NAME
16D0:20 0F 23   126          JSR  PTRSET
16D3:A9 BD      127          LDA  #>LSTNAM
16D5:85 52      128          STA  $52
16D7:A9 13      129          LDA  #<LSTNAM
16D9:85 53      130          STA  $53
16DB:20 21 23   131          JSR  MOVE
16DE:A2 05      132          LDX  #5
16E0:BD AC 12   133          LDA  STUTXT,X
16E3:8D BC 13   134          STA  LNMLEN
16E6:           135 ;
16E6:A0 06      136          LDY  #6           ;LESSON KID USED LAST SESSION
16E8:20 CB 22   137          JSR  ASCDEC
16EB:90 05      138          BCC  *+7
16ED:D0 03      139          BNE  *+5
16EF:20 A2 2F   140          JSR  FATAL
16F2:8D 79 10   141          STA  LESSON     ;DECIMAL, NOT BINARY
16F5:           142 ;
16F5:A0 09      143          LDY  #3*3         ;PART KID WAS IN
16F7:20 0F 23   144          JSR  PTRSET
16FA:C9 01      145          CMP  #1
16FC:F0 03      146          BEQ  *+5
16FE:20 A2 2F   147          JSR  FATAL
1701:A0 00      148          LDY  #0
1703:B1 50      149          LDA  ($50),Y
1705:C9 41      150          CMP  #65
1707:10 03      151          BPL  *+5
1709:20 A2 2F   152          JSR  FATAL
170C:C9 5B      153          CMP  #65+26
170E:30 03      154          BMI  *+5
1710:20 A2 2F   155          JSR  FATAL
1713:8D 7C 10   156          STA  PART
1716:           157 ;
1716:A0 0C      158          LDY  #4*3         ;LAST EXAMPLE DISPLAYED
1718:20 D4 22   159          JSR  ASCBIN
171B:90 03      160          BCC  *+5
171D:20 A2 2F   161          JSR  FATAL
1720:8D 7F 10   162          STA  CUREXA
1723:           163 ;
1723:A0 0F      164          LDY  #5*3         ;LAST PRACTICE DISPLAYED
1725:20 D4 22   165          JSR  ASCBIN
1728:90 03      166          BCC  *+5
172A:20 A2 2F   167          JSR  FATAL
172D:8D 80 10   168          STA  CURPRA
1730:           169 ;
1730:A0 12      170          LDY  #6*3         ;GET # RIGHT ANSWERS, LAST SESSION
1732:20 0F 23   171          JSR  PTRSET
1735:C9 01      172          CMP  #1
1737:F0 03      173          BEQ  *+5
1739:20 A2 2F   174          JSR  FATAL
173C:A0 00      175          LDY  #0
```

```
173E:B1 50                  LDA  ($50),Y
1740:20 02 23               JSR  GETDGT
1743:90 03                  BCC  *+5
1745:20 A2 2F               JSR  FATAL
1748:8D 81 10               STA  NRIGHT
174B:                   ;
174B:                   ; END OF INITIALIZATION
174B:                   ;
174B:20 15 19       COMBLP  JSR  LODPRT
174E:AD CB 15               LDA  NXTTXT
1751:8D F6 14               STA  WRKSPC
1754:AD CC 15               LDA  NXTTXT+1
1757:8D F7 14               STA  WRKSPC+1
175A:                   ;
175A:20 71 2F               JSR  EXARTN     ;DISPLAY AN EXAMPLE
175D:                   ;
175D:20 7E 1F               JSR  CLRSCR
1760:A9 02                  LDA  #2
1762:85 20                  STA  LW
1764:85 24                  STA  HC
1766:85 25                  STA  VC
1768:A2 0B                  LDX  #<MSG1
176A:A0 0D                  LDY  #>MSG1
176C:A9 01                  LDA  #1
176E:20 FB 1C               JSR  DISPWT
1771:A9 06                  LDA  #6
1773:85 25                  STA  VC
1775:A2 0B                  LDX  #<MSG2
1777:A0 3B                  LDY  #>MSG2
1779:A9 01                  LDA  #1
177B:20 FB 1C               JSR  DISPWT
177E:A9 0B                  LDA  #11
1780:85 25                  STA  VC
1782:A2 0B                  LDX  #<MSG3
1784:A0 8D                  LDY  #>MSG3
1786:A9 01                  LDA  #1
1788:20 FB 1C               JSR  DISPWT
178B:A9 11                  LDA  #17
178D:85 25                  STA  VC
178F:A9 00                  LDA  #0
1791:8D 82 10               STA  NERRS
1794:A2 0B                  LDX  #<MSG4
1796:A0 D8                  LDY  #>MSG4
1798:A9 01                  LDA  #1
179A:20 FB 1C               JSR  DISPWT
179D:20 1E 1B               JSR  WAIT15     ;WAIT 15 SEC'S FOR CR
17A0:90 0F                  BCC  PRACLP
17A2:A5 25                  LDA  VC
17A4:69 01                  ADC  #1         ;ADD 2 TO Y CURSOR
17A6:C5 23                  CMP  BW
17A8:30 02                  BMI  *+4
17AA:A5 23                  LDA  BW
17AC:85 25                  STA  VC
17AE:20 EF 18               JSR  WARNCR     ;WARN OF CR TIMEOUT
17B1:20 57 24       PRACLP  JSR  PRARTN
17B4:90 38                  BCC  NOTRIT
17B6:AD 83 10               LDA  EDTBTM
17B9:69 00                  ADC  #0
```

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MAIN2.ASM ----- SENTENCE COMBINING DEMONSTRATION - -09-MAR-82 #000101 PAGE 25

17BB:85 22      234         STA  TW
17BD:85 25      235         STA  VC
17BF:A9 17      236         LDA  #23
17C1:85 23      237         STA  BW
17C3:EE 81 10   238         INC  NRIGHT
17C6:A9 00      239         LDA  #0
17C8:8D 82 10   240         STA  NERRS
17CB:AD 81 10   241         LDA  NRIGHT
17CE:C9 03      242         CMP  #3
17D0:30 03      243         BMI  *+5
17D2:4C 6D 18   244         JMP  THRERT
17D5:20 D0 18   245         JSR  SETWIN
17D8:A2 0C      246         LDX  #<MSG5
17DA:A0 0C      247         LDY  #>MSG5
17DC:A9 01      248         LDA  #1
17DE:20 FB 1C   249         JSR  DISPWT
17E1:20 7F 23   250         JSR  GETCUR
17E4:20 BE 23   251         JSR  CHK20
17E7:90 70      252         BCC  NXTPRA
17E9:A9 04      253         LDA  #4         ;KID ON OVER 20 MIN'S
17EB:4C A3 2F   254         JMP  TRMRTN
17EE:A9 00      255 NOTRIT  LDA  #0
17F0:8D 81 10   256         STA  NRIGHT
17F3:AD 83 10   257         LDA  EDTBTM
17F6:69 01      258         ADC  #1
17F8:85 22      259         STA  TW
17FA:85 25      260         STA  VC
17FC:A9 17      261         LDA  #23
17FE:85 23      262         STA  BW
1800:EE 82 10   263         INC  NERRS
1803:AD 82 10   264         LDA  NERRS
1806:C9 03      265         CMP  #3
1808:10 5E      266         BPL  MISSD3
180A:20 D0 18   267         JSR  SETWIN
180D:A2 0C      268         LDX  #<MSG6
180F:A0 1C      269         LDY  #>MSG6
1811:A9 00      270         LDA  #0
1813:20 FB 1C   271         JSR  DISPWT
1816:AD C3 12   272         LDA  MODEL+2
1819:AE C2 12   273         LDX  MODEL+1
181C:AC C1 12   274         LDY  MODEL
181F:20 0D 1D   275         JSR  DSPSTR
1822:A9 0F      276         LDA  #15
1824:20 32 23   277         JSR  WAIT
1827:20 7F 23   278         JSR  GETCUR
182A:20 BE 23   279         JSR  CHK20
182D:90 05      280         BCC  *+7
182F:A9 04      281         LDA  #4         ;KID ON OVER 20 MIN'S
1831:4C A3 2F   282         JMP  TRMRTN
1834:A2 0D      283         LDX  #<MSG13
1836:A0 E8      284         LDY  #>MSG13
1838:A9 00      285         LDA  #0
183A:20 FB 1C   286         JSR  DISPWT
183D:20 1E 1B   287         JSR  WAIT15
1840:20 71 2F   288         JSR  EXARTN
1843:20 7E 1F   289         JSR  CLRSCR
1846:A9 03      290         LDA  #3
1848:85 24      291         STA  HC
```

```
184A:85 20      292          STA  LW
184C:A9 07      293          LDA  #7
184E:85 25      294          STA  VC
1850:A2 0C      295          LDX  #<MSG7
1852:A0 74      296          LDY  #>MSG7
1854:A9 01      297          LDA  #1
1856:20 FB 1C   298          JSR  DISPWT
1859:A2 0D      299 NXTPRA   LDX  #<MSG12
185B:A0 B9      300          LDY  #>MSG12
185D:A9 00      301          LDA  #0
185F:20 FB 1C   302          JSR  DISPWT
1862:20 1E 1B   303          JSR  WAIT15
1865:4C B1 17   304          JMP  PRACLP
1868:A9 01      305 MISSD3   LDA  #1
186A:4C A3 2F   306          JMP  TRMRTN      ;3 WRONG ANSWERS - KICK KID OFF
186D:AD 7C 10   307 THRERT   LDA  PART
1870:CD 7D 10   308          CMP  LASPRT
1873:10 15      309          BPL  NXTLSN
1875:EE 7C 10   310          INC  PART
1878:20 D0 18   311          JSR  SETWIN
187B:A2 0C      312          LDX  #<MSG8
187D:A0 A1      313          LDY  #>MSG8
187F:A9 00      314          LDA  #0
1881:20 FB 1C   315          JSR  DISPWT
1884:20 1E 1B   316          JSR  WAIT15
1887:4C C2 18   317          JMP  ZROITM
188A:AD 79 10   318 NXTLSN   LDA  LESSON
188D:F8         319          SED
188E:18         320          CLC
188F:69 01      321          ADC  #1
1891:D8         322          CLD
1892:90 05      323          BCC  *+7
1894:A9 02      324 NOMORE   LDA  #2          ;FINISHED LAST LESSON
1896:4C A3 2F   325          JMP  TRMRTN
1899:8D 79 10   326          STA  LESSON
189C:20 9D 19   327          JSR  LODLSN
189F:2C 77 10   328          BIT  GOTLSN
18A2:10 F0      329          BPL  NOMORE
18A4:20 7F 23   330          JSR  GETCUR
18A7:20 CF 23   331          JSR  CHK10
18AA:90 05      332          BCC  *+7
18AC:A9 03      333          LDA  #3          ;KID HAS BEEN ON OVER 10 MIN'S
18AE:4C A3 2F   334          JMP  TRMRTN
18B1:20 D0 18   335          JSR  SETWIN
18B4:A2 0C      336          LDX  #<MSG9
18B6:A2 F1      337          LDX  #>MSG9
18B8:A9 00      338          LDA  #0
18BA:20 FB 1C   339          JSR  DISPWT
18BD:A9 41      340          LDA  #65
18BF:8D 7C 10   341          STA  PART
18C2:A9 00      342 ZROITM   LDA  #0
18C4:8D 7F 10   343          STA  CUREXA
18C7:8D 80 10   344          STA  CURPRA
18CA:8D 81 10   345          STA  NRIGHT
18CD:4C 4B 17   346          JMP  COMBLP
18D0:           347 ;
18D0:           348 ; MOVE Y CURSOR BELOW EDIT WINDOW
18D0:           349 ;
```

```
18D0:AD 83 10  350 SETWIN  LDA  EDTBTM
18D3:18        351         CLC
18D4:69 02     352         ADC  #2
18D6:C5 23     353         CMP  BW
18D8:30 02     354         BMI  *+4
18DA:A5 23     355         LDA  BW
18DC:85 22     356         STA  TW
18DE:85 25     357         STA  VC
18E0:A9 03     358         LDA  #3
18E2:85 20     359         STA  LW
18E4:85 24     360         STA  HC
18E6:A9 27     361         LDA  #39
18E8:85 21     362         STA  RW
18EA:A9 17     363         LDA  #23
18EC:85 23     364         STA  BW
18EE:60        365         RTS
18EF:          366 ;
18EF:          367 ; WARN KID ABOUT CR TIMEOUT
18EF:          368 ;
18EF:A2 0D     369 WARNCR  LDX  #<MSG10
18F1:A0 5D     370         LDY  #>MSG10
18F3:A9 00     371         LDA  #0
18F5:20 FB 1C  372         JSR  DISPWT
18F8:A2 0D     373         LDX  #<MSG11
18FA:A0 89     374         LDY  #>MSG11
18FC:A9 00     375         LDA  #0
18FE:20 FB 1C  376         JSR  DISPWT
1901:20 2B 1B  377         JSR  WAIT30
1904:90 0E     378         BCC  WRN1DN
1906:A2 10     379         LDX  #<MSG31
1908:A0 5D     380         LDY  #>MSG31
190A:A9 00     381         LDA  #0
190C:20 FB 1C  382         JSR  DISPWT
190F:A9 06     383         LDA  #CRTMOU
1911:4C A3 2F  384         JMP  TRMRTN
1914:60        385 WRN1DN  RTS
1915:          386 ;
1915:          387         CHN  MAIN3.ASM
```

```
1915:           ; CONTROL PROGRAM UTILITY MODULE
1915:           ;
1915:           ;
1915:           ; LOAD A PART
1915:           ;
1915:AD 79 10   LODPRT  LDA  LESSON     ;SEE IF LESSON ALREADY LOADED
1918:CD 7A 10           CMP  LSNMEM
191B:F0 0E              BEQ  READPT
191D:20 9D 19           JSR  LODLSN     ;NOT IN CORE - LOAD IT
1920:2C 77 10           BIT  GOTLSN     ;LOAD SUCCESSFULL?
1923:30 06              BMI  READPT
1925:A9 00      BADPRT  LDA  #FALSE
1927:8D 78 10           STA  GOTPRT
192A:60                 RTS
192B:AD 7D 10   READPT  LDA  LASPRT     ;LESSON LOADED - DOES PART EXIST?
192E:CD 7C 10           CMP  PART
1931:30 F2              BMI  BADPRT
1933:           ;
1933:A9 00              LDA  #>TXTBUF
1935:8D CB 15           STA  NXTTXT
1938:A9 40              LDA  #<TXTBUF
193A:8D CC 15           STA  NXTTXT+1
193D:           ;
193D:A9 04              LDA  #>CAPPTR-130
193F:85 54              STA  $54
1941:A9 10              LDA  #<CAPPTR-130
1943:85 55              STA  $55
1945:A9 A4              LDA  #>CAPTXT
1947:85 56              STA  $56
1949:A9 11              LDA  #<CAPTXT
194B:85 57              STA  $57
194D:AE 7C 10           LDX  PART
1950:BD E1 10           LDA  CAPLNS-65,X
1953:8D 7B 10           STA  NUMLNS
1956:A2 01              LDX  #LSNUNT
1958:20 38 1B           JSR  RDTEXT
195B:           ;
195B:A9 38              LDA  #>EXAPTR-130
195D:85 54              STA  $54
195F:A9 10              LDA  #<EXAPTR-130
1961:85 55              STA  $55
1963:A9 E0              LDA  #>EXATXT
1965:85 56              STA  $56
1967:A9 11              LDA  #<EXATXT
1969:85 57              STA  $57
196B:AE 7C 10           LDX  PART
196E:BD FB 10           LDA  EXALNS-65,X
1971:8D 7B 10           STA  NUMLNS
1974:A2 01              LDX  #LSNUNT
1976:20 38 1B           JSR  RDTEXT
1979:           ;
1979:A9 6C              LDA  #>PRAPTR-130
197B:85 54              STA  $54
197D:A9 10              LDA  #<PRAPTR-130
197F:85 55              STA  $55
1981:A9 04              LDA  #>PRATXT
1983:85 56              STA  $56
1985:A9 12              LDA  #<PRATXT
```

```
1987:85 57            STA  $57
1989:AE 7C 10         LDX  PART
198C:BD 15 11         LDA  PRALNS-65,X
198F:8D 7B 10         STA  NUMLNS
1992:A2 01            LDX  #LSNUNT
1994:20 38 1B         JSR  RDTEXT
1997:          ;
1997:A9 80            LDA  #TRUE
1999:8D 78 10         STA  GOTPRT
199C:60               RTS
199D:          ;
199D:          ; LOAD A LESSON
199D:          ;
199D:             LODLSN  EQU  *         ;A CONTAINS LESSON TO LOAD, IN DEC
199D:C9 91            CMP  #$91
199F:D0 06            BNE  RDLSN
19A1:A9 00            LDA  #FALSE
19A3:8D 77 10         STA  GOTLSN
19A6:60               RTS
19A7:AA           RDLSN   TAX
19A8:A0 07            LDY  #7
19AA:29 F0            AND  #$F0
19AC:F0 0B            BEQ  ONEDGT
19AE:18               CLC
19AF:6A               ROR  A
19B0:6A               ROR  A
19B1:6A               ROR  A
19B2:6A               ROR  A
19B3:69 B0            ADC  #48+128
19B5:99 72 13         STA  LSNFIL,Y
19B8:C8               INY
19B9:8A           ONEDGT  TXA
19BA:29 0F            AND  #$0F
19BC:18               CLC
19BD:69 B0            ADC  #48+128
19BF:99 72 13         STA  LSNFIL,Y
19C2:C8               INY
19C3:A9 A0            LDA  #32+128
19C5:99 72 13         STA  LSNFIL,Y
19C8:A2 01            LDX  #LSNUNT
19CA:20 9E 1C         JSR  OPNSET
19CD:A2 FF            LDX  #NOALLO   ;DON'T CREATE NEW FILE IF NOT FOUND
19CF:20 D6 03         JSR  FILMGR
19D2:90 03            BCC  *+5
19D4:20 A9 2F         JSR  GRDRTN    ;CAN'T OPEN.  SEE IF "GRADUATED"
19D7:20 FA 1B         JSR  POSSET+3  ;POSITION TO 1ST BYTE
19DA:A9 00            LDA  #0
19DC:A0 04            LDY  #4
19DE:91 50            STA  ($50),Y
19E0:C8               INY
19E1:91 50            STA  ($50),Y
19E3:20 D6 03         JSR  FILMGR
19E6:90 03            BCC  *+5
19E8:20 A2 2F         JSR  FATAL
19EB:A9 00            LDA  #>TXTBUF
19ED:85 52            STA  $52
19EF:A9 60            LDA  #<TXTBUF
19F1:85 53            STA  $53
```

```
19F3:20 AB 1B  118          JSR  RDSET+3
19F6:20 B7 1B  119          JSR  RDDISK
19F9:90 03     120          BCC  *+5
19FB:20 A2 2F  121          JSR  FATAL
19FE:AD CD 15  122          LDA  BYTSRD
1A01:C9 03     123          CMP  #3
1A03:D0 15     124          BNE  NOTINX
1A05:AD 00 60  125          LDA  TXTBUF
1A08:C9 49     126          CMP  #73       ;'I'
1A0A:D0 0E     127          BNE  NOTINX
1A0C:AD 01 60  128          LDA  TXTBUF+1
1A0F:C9 4E     129          CMP  #78       ;'N'
1A11:D0 07     130          BNE  NOTINX
1A13:AD 02 60  131          LDA  TXTBUF+2
1A16:C9 58     132          CMP  #88       ;'X'
1A18:F0 03     133          BEQ  *+5
1A1A:20 A2 2F  134 NOTINX   JSR  FATAL     ;NOT AN INDEXED LESSON FILE
1A1D:20 B7 1B  135          JSR  RDDISK
1A20:90 03     136          BCC  *+5
1A22:20 A2 2F  137          JSR  FATAL
1A25:AD CD 15  138          LDA  BYTSRD
1A28:C9 01     139          CMP  #1
1A2A:F0 03     140          BEQ  *+5
1A2C:20 A2 2F  141          JSR  FATAL
1A2F:AD 03 60  142          LDA  TXTBUF+3
1A32:C9 41     143          CMP  #65
1A34:10 03     144          BPL  *+5
1A36:20 A2 2F  145          JSR  FATAL
1A39:C9 5B     146          CMP  #91
1A3B:30 03     147          BMI  *+5
1A3D:20 A2 2F  148          JSR  FATAL
1A40:8D 7D 10  149          STA  LASPRT
1A43:38        150          SEC
1A44:E9 40     151          SBC  #64
1A46:8D CA 15  152          STA  NUMPTS
1A49:A9 00     153          LDA  #0
1A4B:8D E7 14  154          STA  COUNT
1A4E:A9 00     155 PARTLP   LDA  #>TXTBUF
1A50:85 52     156          STA  $52
1A52:A9 60     157          LDA  #<TXTBUF
1A54:85 53     158          STA  $53
1A56:A9 94     159          LDA  #>PTRTXT
1A58:85 56     160          STA  $56
1A5A:A9 12     161          LDA  #<PTRTXT
1A5C:85 57     162          STA  $57
1A5E:A9 00     163          LDA  #0
1A60:8D 7E 10  164          STA  PTRPTR
1A63:AC 7E 10  165 PTRLP    LDY  PTRPTR
1A66:A5 52     166          LDA  $52
1A68:91 56     167          STA  ($56),Y
1A6A:A5 53     168          LDA  $53
1A6C:C8        169          INY
1A6D:91 56     170          STA  ($56),Y
1A6F:8C 7E 10  171          STY  PTRPTR
1A72:20 B7 1B  172          JSR  RDDISK
1A75:B0 05     173          BCS  *+7
1A77:AD CD 15  174          LDA  BYTSRD
1A7A:D0 03     175          BNE  *+5
```

```
1A7C:20 A2 2F  176          JSR  FATAL
1A7F:AC 7E 10  177          LDY  PTRPTR
1A82:C8        178          INY
1A83:91 56     179          STA  ($56),Y
1A85:C8        180          INY
1A86:C0 18     181          CPY  #24
1A88:8C 7E 10  182          STY  PTRPTR
1A8B:30 D6     183          BMI  PTRLP
1A8D:          184 ;
1A8D:A0 00     185          LDY  #0
1A8F:20 01 1B  186          JSR  DECPTR
1A92:8A        187          TXA
1A93:99 22 11  188          STA  CAPLNS,Y
1A96:          189 ;
1A96:A0 03     190          LDY  #3
1A98:20 01 1B  191          JSR  DECPTR
1A9B:8A        192          TXA
1A9C:99 70 11  193          STA  EXAITM,Y
1A9F:          194 ;
1A9F:A0 06     195          LDY  #6
1AA1:20 01 1B  196          JSR  DECPTR
1AA4:8A        197          TXA
1AA5:99 3C 11  198          STA  EXALNS,Y
1AA8:          199 ;
1AA8:A0 09     200          LDY  #9
1AAA:20 01 1B  201          JSR  DECPTR
1AAD:8A        202          TXA
1AAE:99 8A 11  203          STA  PRAITM,Y
1AB1:          204 ;
1AB1:A0 0C     205          LDY  #12
1AB3:20 01 1B  206          JSR  DECPTR
1AB6:8A        207          TXA
1AB7:99 56 11  208          STA  PRALNS,Y
1ABA:          209 ;
1ABA:A0 0F     210          LDY  #15
1ABC:20 01 1B  211          JSR  DECPTR
1ABF:0A        212          ASL  A
1AC0:A8        213          TAY
1AC1:8A        214          TXA
1AC2:99 86 10  215          STA  CAPPTR,Y
1AC5:AD CF 15  216          LDA  RESULT+1
1AC8:99 87 10  217          STA  CAPPTR+1,Y
1ACB:          218 ;
1ACB:A0 12     219          LDY  #18
1ACD:20 01 1B  220          JSR  DECPTR
1AD0:0A        221          ASL  A
1AD1:A8        222          TAY
1AD2:8A        223          TXA
1AD3:99 BA 10  224          STA  EXAPTR,Y
1AD6:AD CF 15  225          LDA  RESULT+1
1AD9:99 BB 10  226          STA  EXAPTR+1,Y
1ADC:          227 ;
1ADC:A0 15     228          LDY  #21
1ADE:20 01 1B  229          JSR  DECPTR
1AE1:0A        230          ASL  A
1AE2:A8        231          TAY
1AE3:8A        232          TXA
1AE4:99 EE 10  233          STA  PRAPTR,Y
```

```
1AE7:AD CF 15  234            LDA  RESULT+1
1AEA:99 EF 10  235            STA  PRAPTR+1,Y
1AED:          236 ;
1AED:EE E7 14  237            INC  COUNT
1AF0:AD E7 14  238            LDA  COUNT
1AF3:CD CA 15  239            CMP  NUMPTS
1AF6:10 03     240            BPL  *+5
1AF8:4C 4E 1A  241            JMP  PARTLP
1AFB:          242 ;
1AFB:A9 80     243            LDA  #TRUE
1AFD:8D 77 10  244            STA  GOTLSN
1B00:60        245            RTS
1B01:          246 ;
1B01:          247 ; DECODE PTR & COUNT VALUES
1B01:          248 ;   LOCAL SUBROUTINE FOR LODLSN
1B01:          249 ;
1B01:B9 94 12  250 DECPTR     LDA  PTRTXT,Y
1B04:85 54     251            STA  $54
1B06:B9 95 12  252            LDA  PTRTXT+1,Y
1B09:85 55     253            STA  $55
1B0B:B9 96 12  254            LDA  PTRTXT+2,Y
1B0E:8D D0 15  255            STA  NDGTS
1B11:20 E0 23  256            JSR  DECODE
1B14:90 03     257            BCC  *+5
1B16:20 A2 2F  258            JSR  FATAL
1B19:AC E7 14  259            LDY  COUNT
1B1C:98        260            TYA
1B1D:60        261            RTS
1B1E:          262 ;
1B1E:          263 ; WAIT 15 SEC'S FOR CR
1B1E:          264 ;
1B1E:20 8A 23  265 WAIT15     JSR  GETCHR
1B21:A9 F0     266            LDA  #>15*16
1B23:A2 00     267            LDX  #<15*16
1B25:20 95 23  268            JSR  ADDTIM
1B28:4C 51 23  269            JMP  WAITCR
1B2B:          270 ;
1B2B:          271 ; WAIT 30 SEC'S FOR CR
1B2B:          272 ;
1B2B:20 8A 23  273 WAIT30     JSR  GETCHR
1B2E:A9 E0     274            LDA  #>30*16
1B30:A2 01     275            LDX  #<30*16
1B32:20 95 23  276            JSR  ADDTIM
1B35:4C 51 23  277            JMP  WAITCR
1B38:          278 ;
1B38:          279 ; READ CAPTION, EXAMPLE, OR PRACTICE LINES
1B38:          280 ;    FOR A PART FROM THE LESSON FILE
1B38:          281 ;
1B38:20 F7 1B  282 RDTEXT     JSR  POSSET
1B3B:AD 7C 10  283            LDA  PART
1B3E:0A        284            ASL  A
1B3F:AA        285            TAX
1B40:A8        286            TAY
1B41:B1 54     287            LDA  ($54),Y
1B43:A0 04     288            LDY  #4
1B45:91 50     289            STA  ($50),Y
1B47:E8        290            INX
1B48:8A        291            TXA
```

```
1B49:A8          292          TAY
1B4A:B1 54       293          LDA  ($54),Y
1B4C:A0 05       294          LDY  #5
1B4E:91 50       295          STA  ($50),Y
1B50:A2 FF       296          LDX  #NOALLO
1B52:20 D6 03    297          JSR  FILMGR
1B55:90 03       298          BCC  *+5
1B57:20 A2 2F    299          JSR  FATAL
1B5A:20 A8 1B    300          JSR  RDSET+3
1B5D:AD CB 15    301          LDA  NXTTXT
1B60:85 52       302          STA  $52
1B62:AD CC 15    303          LDA  NXTTXT+1
1B65:85 53       304          STA  $53
1B67:A9 00       305          LDA  #0
1B69:8D E7 14    306          STA  COUNT
1B6C:48          307          PHA
1B6D:AD E7 14    308 TEXTLP   LDA  COUNT
1B70:CD 7B 10    309          CMP  NUMLNS
1B73:10 27       310          BPL  GOTTXT
1B75:68          311          PLA
1B76:A8          312          TAY
1B77:A5 52       313          LDA  $52
1B79:91 56       314          STA  ($56),Y
1B7B:A5 53       315          LDA  $53
1B7D:C8          316          INY
1B7E:91 56       317          STA  ($56),Y
1B80:98          318          TYA
1B81:48          319          PHA
1B82:20 B7 1B    320          JSR  RDDISK
1B85:90 04       321          BCC  *+6
1B87:68          322          PLA
1B88:20 A2 2F    323          JSR  FATAL
1B8B:68          324          PLA
1B8C:A8          325          TAY
1B8D:AD CD 15    326          LDA  BYTSRD
1B90:C8          327          INY
1B91:91 56       328          STA  ($56),Y
1B93:C8          329          INY
1B94:98          330          TYA
1B95:48          331          PHA
1B96:EE E7 14    332          INC  COUNT
1B99:4C 6D 1B    333          JMP  TEXTLP
1B9C:A5 52       334 GOTTXT   LDA  $52
1B9E:8D CB 15    335          STA  NXTTXT
1BA1:A5 53       336          LDA  $53
1BA3:8D CC 15    337          STA  NXTTXT+1
1BA6:68          338          PLA
1BA7:60          339          RTS
1BA8:            340          CHN  MAIN4.ASM
```

```
1BA8:             2 ; DISK I/O MODULE
1BA8:             3 ;
1BA8:             4 ; SET UP FOR A DOS READ A BYTE COMMAND
1BA8:             5 ;
1BA8:20 0B 1C     6 RDSET    JSR  UNTSET
1BAB:A0 00        7          LDY  #0
1BAD:A9 03        8          LDA  #RDCMD
1BAF:91 50        9          STA  ($50),Y
1BB1:A9 01       10          LDA  #ONEBYT
1BB3:C8          11          INY
1BB4:91 50       12          STA  ($50),Y
1BB6:60          13          RTS
1BB7:            14 ;
1BB7:            15 ; READ A LINE FROM THE DISK
1BB7:            16 ;
1BB7:A9 00       17 RDDISK   LDA  #0
1BB9:8D CD 15    18          STA  BYTSRD
1BBC:20 D6 03    19 RDDKLP   JSR  FILMGR
1BBF:B0 16       20          BCS  DSKEOF
1BC1:A0 08       21          LDY  #8
1BC3:B1 50       22          LDA  ($50),Y
1BC5:29 7F       23          AND  #$7F
1BC7:C9 0D       24          CMP  #13
1BC9:F0 1C       25          BEQ  DSKEOL
1BCB:AC CD 15    26          LDY  BYTSRD
1BCE:91 52       27          STA  ($52),Y
1BD0:C8          28          INY
1BD1:8C CD 15    29          STY  BYTSRD
1BD4:4C BC 1B    30          JMP  RDDKLP
1BD7:A0 0A       31 DSKEOF   LDY  #10
1BD9:B1 50       32          LDA  ($50),Y
1BDB:C9 05       33          CMP  #EOFERR
1BDD:F0 03       34          BEQ  *+5
1BDF:20 A2 2F    35          JSR  FATAL
1BE2:20 E7 1B    36          JSR  DSKEOL
1BE5:38          37          SEC
1BE6:60          38          RTS
1BE7:A5 52       39 DSKEOL   LDA  $52
1BE9:18          40          CLC
1BEA:6D CD 15    41          ADC  BYTSRD
1BED:85 52       42          STA  $52
1BEF:A5 53       43          LDA  $53
1BF1:69 00       44          ADC  #0
1BF3:85 53       45          STA  $53
1BF5:18          46          CLC
1BF6:60          47          RTS
1BF7:            48 ;
1BF7:            49 ; SET UP FOR A DOS POSITION TO A BYTE COMMAND
1BF7:            50 ;
1BF7:20 0B 1C    51 POSSET   JSR  UNTSET
1BFA:A0 00       52          LDY  #0
1BFC:A9 0A       53          LDA  #POSCMD
1BFE:91 50       54          STA  ($50),Y
1C00:98          55          TYA
1C01:C8          56          INY
1C02:91 50       57          STA  ($50),Y   ;NO-OP SUBCOMMAND
1C04:C8          58          INY
1C05:91 50       59          STA  ($50),Y   ;RECORD # 0 (I.E., POS TO BYTE)
```

```
MAIN4.ASM      SENTENCE COMBINING DEMONSTRATION    09-MAR-82 #000101 PAGE 35

1C07:C8         60          INY
1C08:91 50      61          STA  ($50),Y
1C0A:60         62          RTS
1C0B:           63 ;
1C0B:           64 ; SET FILE MANAGER PARAMETER LIST
1C0B:           65 ;    TO VALUES FOR UNIT IN X REGISTER
1C0B:           66 ;
1C0B:20 DC 03   67 UNTSET   JSR  GETPRM
1C0E:84 50      68          STY  $50
1C10:85 51      69          STA  $51
1C12:8A         70          TXA
1C13:48         71          PHA
1C14:0A         72          ASL  A
1C15:AA         73          TAX
1C16:A0 0C      74          LDY  #$0C
1C18:BD D1 13   75          LDA  WRKBUF,X
1C1B:91 50      76          STA  ($50),Y
1C1D:BD D2 13   77          LDA  WRKBUF+1,X
1C20:C8         78          INY
1C21:91 50      79          STA  ($50),Y
1C23:BD D5 13   80          LDA  TSLIST,X
1C26:C8         81          INY
1C27:91 50      82          STA  ($50),Y
1C29:BD D6 13   83          LDA  TSLIST+1,X
1C2C:C8         84          INY
1C2D:91 50      85          STA  ($50),Y
1C2F:BD D9 13   86          LDA  DATBUF,X
1C32:C8         87          INY
1C33:91 50      88          STA  ($50),Y
1C35:BD DA 13   89          LDA  DATBUF+1,X
1C38:C8         90          INY
1C39:91 50      91          STA  ($50),Y
1C3B:68         92          PLA
1C3C:AA         93          TAX                ;RESTORE UNIT # TO X
1C3D:60         94          RTS
1C3E:           95 ;
1C3E:           96 ; SET UP FOR OPEN COMMAND
1C3E:           97 ;
1C3E:20 0B 1C   98 OPNSET   JSR  UNTSET
1C41:A9 01      99          LDA  #OPNCMD
1C43:A0 00     100          LDY  #0
1C45:91 50     101          STA  ($50),Y
1C47:98        102          TYA
1C48:A0 02     103          LDY  #2
1C4A:91 50     104          STA  ($50),Y   ;VARIABLE RECORD LENGTH
1C4C:C8        105          INY
1C4D:91 50     106          STA  ($50),Y
1C4F:C8        107          INY
1C50:91 50     108          STA  ($50),Y   ;ANY VOLUME
1C52:BD E1 13  109          LDA  DRIVE,X
1C55:C8        110          INY
1C56:91 50     111          STA  ($50),Y
1C58:BD E3 13  112          LDA  SLOT,X
1C5B:C8        113          INY
1C5C:91 50     114          STA  ($50),Y
1C5E:BD E5 13  115          LDA  FILTYP,X
1C61:C8        116          INY
1C62:91 50     117          STA  ($50),Y
```

```
MAIN4.ASM      SENTENCE COMBINING DEMONSTRATION   09-MAR-82 #000101 PAGE 36

1C64:8A          118          TXA
1C65:0A          119          ASL  A
1C66:AA          120          TAX
1C67:BD DD 13    121          LDA  FILNAM,X
1C6A:C8          122          INY
1C6B:91 50       123          STA  ($50),Y
1C6D:BD DE 13    124          LDA  FILNAM+1,X
1C70:C8          125          INY
1C71:91 50       126          STA  ($50),Y
1C73:60          127          RTS
1C74:            128 ;
1C74:            129 ; FIND, INITIALIZE DOS BUFFER FOR UNIT IN A
1C74:            130 ;
1C74:0A          131 BUFSET   ASL  A
1C75:85 52       132          STA  $52
1C77:20 D3 1C    133          JSR  GETBUF
1C7A:90 03       134          BCC  *+5
1C7C:20 A2 2F    135          JSR  FATAL      ;NO FREE BUFFERS
1C7F:A5 52       136          LDA  $52
1C81:0A          137          ASL  A
1C82:0A          138          ASL  A
1C83:0A          139          ASL  A
1C84:0A          140          ASL  A
1C85:38          141          SEC
1C86:E5 52       142          SBC  $52
1C88:AA          143          TAX
1C89:A0 00       144          LDY  #0
1C8B:BD 54 13    145          LDA  FILNMS,X  ;ENSURE 1ST CHAR IN FILE NAME NOT 0
1C8E:91 50       146          STA  ($50),Y
1C90:A6 52       147          LDX  $52
1C92:A0 1E       148          LDY  #30
1C94:A5 50       149          LDA  $50
1C96:38          150          SEC
1C97:E9 2D       151          SBC  #45
1C99:9D D1 13    152          STA  WRKBUF,X
1C9C:91 50       153          STA  ($50),Y
1C9E:A5 51       154          LDA  $51
1CA0:E9 00       155          SBC  #0
1CA2:9D D2 13    156          STA  WRKBUF+1,X
1CA5:C8          157          INY
1CA6:91 50       158          STA  ($50),Y
1CA8:A5 50       159          LDA  $50
1CAA:38          160          SEC
1CAB:E9 2D       161          SBC  #>45+256
1CAD:9D D5 13    162          STA  TSLIST,X
1CB0:C8          163          INY
1CB1:91 50       164          STA  ($50),Y
1CB3:A5 51       165          LDA  $51
1CB5:E9 01       166          SBC  #<45+256
1CB7:9D D6 13    167          STA  TSLIST+1,X
1CBA:C8          168          INY
1CBB:91 50       169          STA  ($50),Y
1CBD:A5 50       170          LDA  $50
1CBF:38          171          SEC
1CC0:E9 2D       172          SBC  #>45+256+256
1CC2:9D D9 13    173          STA  DATBUF,X
1CC5:C8          174          INY
1CC6:91 50       175          STA  ($50),Y
```

```
MAIN4.ASM        SENTENCE COMBINING DEMONSTRATION   09-MAR-82 #000101 PAGE 37

1CC8:A5 51      176          LDA  $51
1CCA:E9 02      177          SBC  #<45+256+256
1CCC:9D DA 13   178          STA  DATBUF+1,X
1CCF:C8         179          INY
1CD0:91 50      180          STA  ($50),Y
1CD2:60         181          RTS
1CD3:           182 ;
1CD3:           183 ; LOCATE A FREE DOS BUFFER
1CD3:           184 ;
1CD3:AD D2 03   185 GETBUF   LDA  $03D2
1CD6:85 51      186          STA  $51
1CD8:A0 00      187          LDY  #0
1CDA:84 50      188          STY  $50
1CDC:B1 50      189 BUFLP    LDA  ($50),Y
1CDE:48         190          PHA
1CDF:C8         191          INY
1CE0:B1 50      192          LDA  ($50),Y
1CE2:85 51      193          STA  $51
1CE4:68         194          PLA
1CE5:85 50      195          STA  $50
1CE7:D0 04      196          BNE  CHKBUF
1CE9:A5 51      197          LDA  $51
1CEB:F0 0C      198          BEQ  NOBUFF
1CED:A0 00      199 CHKBUF   LDY  #0
1CEF:B1 50      200          LDA  ($50),Y
1CF1:F0 04      201          BEQ  GOTBUF
1CF3:A0 24      202          LDY  #36
1CF5:D0 E5      203          BNE  BUFLP
1CF7:18         204 GOTBUF   CLC
1CF8:60         205          RTS
1CF9:38         206 NOBUFF   SEC
1CFA:60         207          RTS
1CFB:           208          CHN  MAIN5.ASM
```

```
1CFB:            ; KEYBOARD/SCREEN I/O MODULE
1CFB:            ;
1CFB:            ; DISPLAY A STRG ON THE SCREEN
1CFB:            ;    THEN PAUSE # SEC'S IN A
1CFB:48          DISPWT  PHA
1CFC:84 48               STY  $48
1CFE:86 49               STX  $49
1D00:A0 00               LDY  #0
1D02:B1 48               LDA  ($48),Y
1D04:85 58               STA  $58
1D06:20 1A 1D            JSR  DSPNEW
1D09:68                  PLA
1D0A:4C 32 23            JMP  WAIT
1D0D:            ;
1D0D:            ; DISPLAY A STRING VARIABLE
1D0D:            ;
1D0D:85 58       DSPSTR  STA  $58
1D0F:98                  TYA
1D10:38                  SEC
1D11:E9 01               SBC  #1
1D13:85 48               STA  $48
1D15:8A                  TXA
1D16:E9 00               SBC  #0
1D18:85 49               STA  $49
1D1A:            ;
1D1A:            ; DISPLAY TEXT ON THE SCREEN
1D1A:            ;
1D1A:A9 20       DSPNEW  LDA  #32        ;ENTRY TO START NEW LINE
1D1C:8D F0 13            STA  LASCHR
1D1F:A9 00       DISPLA  LDA  #0         ;ENTRY TO RESUME A LINE
1D21:48                  PHA
1D22:68          DISPLP  PLA
1D23:A8                  TAY
1D24:C4 58               CPY  $58
1D26:D0 03               BNE  *+5
1D28:4C CD 1D            JMP  DSPDUN
1D2B:C8                  INY
1D2C:98                  TYA
1D2D:48                  PHA
1D2E:B1 48               LDA  ($48),Y
1D30:D0 25               BNE  NOTNAM
1D32:A5 48               LDA  $48        ;NULL CHAR - INSERT KID'S NAME
1D34:48                  PHA              ;SAVE STATE FOR RECURS CALL
1D35:A5 49               LDA  $49
1D37:48                  PHA
1D38:A5 58               LDA  $58
1D3A:48                  PHA
1D3B:A9 13               LDA  #<FSTNAM-1
1D3D:85 49               STA  $49
1D3F:A9 A7               LDA  #>FSTNAM-1
1D41:85 48               STA  $48
1D43:AD A7 13            LDA  FNMLEN
1D46:85 58               STA  $58
1D48:20 1F 1D            JSR  DISPLA
1D4B:68                  PLA
1D4C:85 58               STA  $58
1D4E:68                  PLA
1D4F:85 49               STA  $49
```

```
1D51:68          60          PLA
1D52:85 48       61          STA  $48
1D54:4C 22 1D    62          JMP  DISPLP
1D57:C9 2B       63 NOTNAM   CMP  #43      ;'+'? (= CR)
1D59:F0 08       64          BEQ  NEWLIN
1D5B:C9 20       65          CMP  #32
1D5D:10 16       66          BPL  NOTSPE
1D5F:C9 0D       67          CMP  #13
1D61:D0 BF       68          BNE  DISPLP   ;CR ONLY SPEC CHAR USED
1D63:A5 20       69 NEWLIN   LDA  LW
1D65:85 24       70          STA  HC
1D67:A5 25       71          LDA  VC
1D69:E6 25       72          INC  VC
1D6B:C5 23       73          CMP  BW
1D6D:30 B3       74          BMI  DISPLP
1D6F:20 C8 1F    75          JSR  SCROLL
1D72:4C 22 1D    76          JMP  DISPLP
1D75:48          77 NOTSPE   PHA
1D76:F0 38       78          BEQ  BLKCH
1D78:A5 24       79          LDA  HC
1D7A:C5 21       80          CMP  RW
1D7C:D0 3D       81          BNE  DISPCH
1D7E:A5 25       82          LDA  VC
1D80:C5 23       83          CMP  BW
1D82:D0 09       84          BNE  *+11
1D84:20 C8 1F    85          JSR  SCROLL
1D87:C6 25       86          DEC  VC
1D89:A5 21       87          LDA  RW
1D8B:85 24       88          STA  HC
1D8D:20 3E 1E    89          JSR  FINDST
1D90:2C EB 13    90          BIT  GOTBLK
1D93:30 04       91          BMI  *+6
1D95:A9 00       92          LDA  #0
1D97:F0 0F       93          BEQ  NOTWRP
1D99:E6 25       94          INC  VC
1D9B:AD E4 14    95          LDA  WRDLEN
1D9E:F0 08       96          BEQ  NOTWRP
1DA0:E6 24       97          INC  HC
1DA2:20 6F 1E    98          JSR  WRDWRP
1DA5:AD E4 14    99          LDA  WRDLEN
1DA8:18         100 NOTWRP   CLC
1DA9:65 20      101          ADC  LW
1DAB:85 24      102          STA  HC
1DAD:4C BB 1D   103          JMP  DISPCH
1DB0:AD F0 13   104 BLKCH    LDA  LASCHR
1DB3:C9 20      105          CMP  #32
1DB5:D0 04      106          BNE  *+6
1DB7:68         107          PLA
1DB8:4C 22 1D   108          JMP  DISPLP
1DBB:20 6D 1F   109 DISPCH   JSR  SCRADD
1DBE:68         110          PLA
1DBF:8D F0 13   111          STA  LASCHR
1DC2:91 50      112          STA  ($50),Y
1DC4:20 21 1F   113          JSR  HIROUT
1DC7:20 BF 1F   114          JSR  ADVSCR
1DCA:4C 22 1D   115          JMP  DISPLP
1DCD:60         116 DSPDUN   RTS
1DCE:           117 ;
```

```
1DCE:              118 ; READ A CHAR FROM THE KBD
1DCE:              119 ;
1DCE:A5 25         120 KBDIN    LDA  VC
1DD0:0A            121          ASL  A
1DD1:AA            122          TAX
1DD2:BD F8 14      123          LDA  IMGLOC,X
1DD5:65 24         124          ADC  HC
1DD7:85 50         125          STA  $50
1DD9:BD F9 14      126          LDA  IMGLOC+1,X
1DDC:69 58         127          ADC  #<22528   ;POINT TO LOW STRIPE ON SCREEN
1DDE:85 51         128          STA  $51
1DE0:A0 00         129          LDY  #0
1DE2:8C E7 14      130          STY  COUNT
1DE5:B1 50         131          LDA  ($50),Y
1DE7:8D E8 14      132          STA  NORMAL
1DEA:A0 00         133 KBDLP    LDY  #0
1DEC:B1 50         134          LDA  ($50),Y
1DEE:49 FF         135          EOR  #$FF
1DF0:91 50         136          STA  ($50),Y   ;INVERT AND REPLACE CURSOR
1DF2:A9 0A         137          LDA  #10
1DF4:8D E9 14      138          STA  COUNT2
1DF7:AD 00 C0      139 KBD1     LDA  $C000          ;READ KBD
1DFA:C9 FF         140          CMP  #$FF           ;IGNORE PHONY INPUT
1DFC:F0 04         141          BEQ  *+6
1DFE:09 00         142          ORA  #0
1E00:30 14         143          BMI  GOTCH
1E02:20 7F 23      144          JSR  GETCUR
1E05:20 AD 23      145          JSR  CHKCHR
1E08:B0 20         146          BCS  TIMEUP
1E0A:CE E7 14      147          DEC  COUNT
1E0D:D0 E8         148          BNE  KBD1
1E0F:CE E9 14      149          DEC  COUNT2
1E12:D0 E3         150          BNE  KBD1
1E14:F0 D4         151          BEQ  KBDLP
1E16:29 7F         152 GOTCH    AND  #$7F
1E18:C9 41         153          CMP  #65
1E1A:30 13         154          BMI  KBD3
1E1C:C9 5B         155          CMP  #65+26
1E1E:10 0F         156          BPL  KBD3
1E20:2C E6 14      157          BIT  CASFLG
1E23:10 0A         158          BPL  KBD3         ;UPPER CASE IF CASE FLAG = 0
1E25:18            159          CLC
1E26:69 20         160          ADC  #32          ;CVT TO LOWER CASE
1E28:10 05         161          BPL  KBD3
1E2A:38            162 TIMEUP   SEC
1E2B:A9 FF         163          LDA  #$FF
1E2D:B0 01         164          BCS  *+3
1E2F:18            165 KBD3     CLC
1E30:48            166          PHA
1E31:A9 00         167          LDA  #0
1E33:8D 10 C0      168          STA  $C010        ;CLEAR KBD STROBE
1E36:A8            169          TAY
1E37:AD E8 14      170          LDA  NORMAL
1E3A:91 50         171          STA  ($50),Y
1E3C:68            172          PLA
1E3D:60            173          RTS
1E3E:              174 ;
1E3E:              175 ; FIND START OF WORD TO BE WRAPPED
```

```
1E3E:            176 ;
1E3E:            177 FINDST   EQU  *
1E3E:A9 00       178          LDA  #0
1E40:8D E4 14    179          STA  WRDLEN
1E43:8D EB 13    180          STA  GOTBLK
1E46:8D E5 14    181          STA  HITBOL
1E49:            182 SRC001   EQU  *
1E49:C6 24       183          DEC  HC
1E4B:A5 24       184          LDA  HC
1E4D:C5 20       185          CMP  LW
1E4F:10 07       186          BPL  *+9
1E51:38          187          SEC
1E52:6E E5 14    188          ROR  HITBOL
1E55:4C 6E 1E    189          JMP  ESR001
1E58:20 6B 1F    190          JSR  SCRADD
1E5B:B1 50       191          LDA  ($50),Y
1E5D:C9 20       192          CMP  #32
1E5F:D0 07       193          BNE  *+9
1E61:38          194          SEC
1E62:6E EB 13    195          ROR  GOTBLK
1E65:4C 6E 1E    196          JMP  ESR001
1E68:EE E4 14    197          INC  WRDLEN
1E6B:4C 49 1E    198          JMP  SRC001
1E6E:            199 ESR001   EQU  *
1E6E:60          200          RTS
1E6F:            201 ;
1E6F:            202 ; MOVE A WORD FROM THE END OF ONE
1E6F:            203 ;   LINE TO THE START OF THE NEXT
1E6F:            204 ;   (WORD WRAP)
1E6F:            205 ;
1E6F:            206 WRDWRP   EQU  *
1E6F:A5 25       207          LDA  VC
1E71:0A          208          ASL  A
1E72:AA          209          TAX
1E73:CA          210          DEX
1E74:CA          211          DEX
1E75:A5 21       212          LDA  RW
1E77:38          213          SEC
1E78:ED E4 14    214          SBC  WRDLEN
1E7B:18          215          CLC
1E7C:7D F8 14    216          ADC  IMOLOC,X
1E7F:85 52       217          STA  $52
1E81:BD F9 14    218          LDA  IMOLOC+1,X
1E84:69 00       219          ADC  #0
1E86:85 53       220          STA  $53
1E88:A4 20       221          LDY  LW
1E8A:E8          222          INX
1E8B:E8          223          INX
1E8C:20 73 1F    224          JSR  SCRADD+6
1E8F:A5 20       225          LDA  LW
1E91:18          226          CLC
1E92:65 50       227          ADC  $50
1E94:85 50       228          STA  $50
1E96:A0 00       229          LDY  #0
1E98:            230 WHL005   EQU  *
1E98:CC E4 14    231          CPY  WRDLEN
1E9B:10 26       232          BPL  EWH005
1E9D:B1 52       233          LDA  ($52),Y
```

```
1E9F:91 50      234         STA  ($50),Y
1EA1:20 21 1F   235         JSR  HIROUT
1EA4:A5 50      236         LDA  $50
1EA6:48         237         PHA
1EA7:A5 51      238         LDA  $51
1EA9:48         239         PHA
1EAA:A5 52      240         LDA  $52
1EAC:85 50      241         STA  $50
1EAE:A5 53      242         LDA  $53
1EB0:85 51      243         STA  $51
1EB2:A9 20      244         LDA  #32
1EB4:91 52      245         STA  ($52),Y
1EB6:20 21 1F   246         JSR  HIROUT
1EB9:68         247         PLA
1EBA:85 51      248         STA  $51
1EBC:68         249         PLA
1EBD:85 50      250         STA  $50
1EBF:C8         251         INY
1EC0:4C 98 1E   252         JMP  WHL005
1EC3:           253 EWH005  EQU  *
1EC3:60         254         RTS
1EC4:           255 ;
1EC4:           256 ; RETRACT THE CURSOR
1EC4:           257 ;
1EC4:           258 RETCRS  EQU  *
1EC4:A9 00      259         LDA  #0
1EC6:8D EF 13   260         STA  HITBGN
1EC9:C6 24      261         DEC  HC
1ECB:A5 24      262         LDA  HC
1ECD:C5 20      263         CMP  LW
1ECF:10 1E      264         BPL  EIF016
1ED1:A5 25      265         LDA  VC
1ED3:C5 22      266         CMP  TW
1ED5:30 0B      267         BMI  ELS017
1ED7:F0 09      268         BEQ  ELS017
1ED9:C6 25      269         DEC  VC
1EDB:A5 21      270         LDA  RW
1EDD:85 24      271         STA  HC
1EDF:4C EF 1E   272         JMP  EIF017
1EE2:           273 ELS017  EQU  *
1EE2:A5 22      274         LDA  TW
1EE4:85 25      275         STA  VC
1EE6:A5 20      276         LDA  LW
1EE8:85 24      277         STA  HC
1EEA:A9 80      278         LDA  #TRUE
1EEC:8D EF 13   279         STA  HITBGN
1EEF:           280 EIF017  EQU  *
1EEF:           281 EIF016  EQU  *
1EEF:60         282         RTS
1EF0:           283 ;
1EF0:           284 ; ADVANCE THE CURSOR
1EF0:           285 ;
1EF0:A9 00      286 ADVCRS  LDA  #0
1EF2:8D ED 13   287         STA  HITEND
1EF5:E6 24      288         INC  HC
1EF7:A5 24      289         LDA  HC
1EF9:C5 21      290         CMP  RW
1EFB:30 23      291         BMI  EIF018
```

```
1EFD:F0 21      292         BEQ  EIF018
1EFF:E6 25      293         INC  VC
1F01:A5 25      294         LDA  VC
1F03:C5 23      295         CMP  BW
1F05:30 15      296         BMI  ELS019
1F07:F0 13      297         BEQ  ELS019
1F09:A5 23      298         LDA  BW
1F0B:85 25      299         STA  VC
1F0D:A5 21      300         LDA  RW
1F0F:38         301         SEC
1F10:E9 01      302         SBC  #1
1F12:85 24      303         STA  HC
1F14:A9 80      304         LDA  #TRUE
1F16:8D ED 13   305         STA  HITEND
1F19:4C 20 1F   306         JMP  EIF019
1F1C:           307 ELS019  EQU  *
1F1C:A5 20      308         LDA  LW
1F1E:85 24      309         STA  HC
1F20:           310 EIF019  EQU  *
1F20:           311 EIF018  EQU  *
1F20:60         312         RTS
1F21:           313 ;
1F21:           314 ; DISPLAY A CHAR ON THE HI-RES SCREEN
1F21:           315 ;
1F21:           316 HIROUT  EQU  *
1F21:8D ED 14   317         STA  SAVCHR
1F24:98         318         TYA
1F25:48         319         PHA
1F26:18         320         CLC
1F27:65 50      321         ADC  $50
1F29:85 56      322         STA  $56
1F2B:A5 51      323         LDA  $51
1F2D:69 3C      324         ADC  #<15360
1F2F:85 57      325         STA  $57
1F31:AD ED 14   326         LDA  SAVCHR
1F34:29 7F      327         AND  #$7F
1F36:38         328         SEC
1F37:E9 20      329         SBC  #32
1F39:2A         330         ROL  A
1F3A:2A         331         ROL  A
1F3B:2A         332         ROL  A
1F3C:A8         333         TAY
1F3D:29 F8      334         AND  #$F8
1F3F:85 54      335         STA  $54
1F41:98         336         TYA
1F42:2A         337         ROL  A
1F43:29 07      338         AND  #$07
1F45:09 08      339         ORA  #<2048
1F47:85 55      340         STA  $55
1F49:8A         341         TXA
1F4A:48         342         PHA
1F4B:A2 08      343         LDX  #8
1F4D:A0 00      344         LDY  #0
1F4F:8C EC 14   345         STY  STRPNO
1F52:B1 54      346 HILOOP  LDA  ($54),Y
1F54:EE EC 14   347         INC  STRPNO
1F57:A0 00      348         LDY  #0
1F59:91 56      349         STA  ($56),Y
```

```
1F5B:A5 57      350          LDA  $57
1F5D:18         351          CLC
1F5E:69 04      352          ADC  #<1024
1F60:85 57      353          STA  $57
1F62:AC EC 14   354          LDY  STRPNO
1F65:CA         355          DEX
1F66:D0 EA      356          BNE  HILOOP
1F68:68         357          PLA
1F69:AA         358          TAX
1F6A:68         359          PLA
1F6B:A8         360          TAY
1F6C:60         361          RTS
1F6D:           362 ;
1F6D:           363 ; CALC LO-RES SCREEN ADDR
1F6D:           364 ;
1F6D:           365 SCRADD   EQU  *
1F6D:A4 24      366          LDY  HC
1F6F:A5 25      367          LDA  VC
1F71:0A         368          ASL  A
1F72:AA         369          TAX
1F73:BD F8 14   370          LDA  IMOLOC,X
1F76:85 50      371          STA  $50
1F78:BD F9 14   372          LDA  IMOLOC+1,X
1F7B:85 51      373          STA  $51
1F7D:60         374          RTS
1F7E:           375 ;
1F7E:           376 ; CLEAR WHOLE SCREEN
1F7E:           377 ;
1F7E:A9 00      378 CLRSCR   LDA  #0
1F80:85 20      379          STA  LW
1F82:85 22      380          STA  TW
1F84:A9 27      381          LDA  #39
1F86:85 21      382          STA  RW
1F88:A9 17      383          LDA  #23
1F8A:85 23      384          STA  BW
1F8C:           385 ;
1F8C:           386 ; CLEAR THE EDIT WINDOW
1F8C:           387 ;
1F8C:           388 CLRWIN   EQU  *
1F8C:A5 23      389          LDA  BW
1F8E:0A         390          ASL  A
1F8F:8D EE 14   391          STA  CLRBTM
1F92:A5 22      392          LDA  TW
1F94:0A         393          ASL  A
1F95:AA         394          TAX
1F96:           395 WHL006   EQU  *
1F96:EC EE 14   396          CPX  CLRBTM
1F99:30 02      397          BMI  *+4
1F9B:D0 19      398          BNE  EWH006
1F9D:A4 20      399          LDY  LW
1F9F:20 73 1F   400          JSR  SCRADD+6
1FA2:           401 WHL007   EQU  *
1FA2:C4 21      402          CPY  RW
1FA4:30 02      403          BMI  *+4
1FA6:D0 0A      404          BNE  EWH007
1FA8:A9 20      405          LDA  #32
1FAA:91 50      406          STA  ($50),Y
1FAC:20 21 1F   407          JSR  HIROUT
```

```
1FAF:C8         408          INY
1FB0:10 F0      409          BPL  WHL007
1FB2:           410 EWH007   EQU  *
1FB2:E8         411          INX
1FB3:E8         412          INX
1FB4:10 E0      413          BPL  WHL006
1FB6:           414 EWH006   EQU  *
1FB6:A5 20      415          LDA  LW
1FB8:85 24      416          STA  HC
1FBA:A5 22      417          LDA  TW
1FBC:85 25      418          STA  VC
1FBE:60         419          RTS
1FBF:           420 ;
1FBF:           421 ; ADVANCE CURSOR, WITH SCROLLING
1FBF:           422 ;
1FBF:20 F0 1E   423 ADVSCR   JSR  ADVCRS
1FC2:2C ED 13   424          BIT  HITEND
1FC5:30 01      425          BMI  *+3
1FC7:60         426          RTS
1FC8:           427 ;
1FC8:           428 ; SCROLL THE SCREEN WINDOW
1FC8:           429 ;    $40-$41,$44-$45 POINT TO OLD,
1FC8:           430 ;      NEW CHAR LOC'S, LO-RES SCREEN
1FC8:           431 ;    $42-$43,$46-$47 SAME, HI-RES
1FC8:           432 ;
1FC8:A5 22      433 SCROLL   LDA  TW
1FCA:0A         434          ASL  A
1FCB:AA         435          TAX
1FCC:A5 23      436          LDA  BW
1FCE:0A         437          ASL  A
1FCF:85 51      438          STA  $51
1FD1:E8         439 YLOOP    INX
1FD2:E8         440          INX
1FD3:E4 51      441          CPX  $51
1FD5:F0 02      442          BEQ  *+4
1FD7:10 4F      443          BPL  LASLIN
1FD9:BD F8 14   444          LDA  IMGLOC,X
1FDC:85 40      445          STA  $40
1FDE:85 42      446          STA  $42
1FE0:BD F9 14   447          LDA  IMGLOC+1,X
1FE3:85 41      448          STA  $41
1FE5:18         449          CLC
1FE6:69 3C      450          ADC  #<15360
1FE8:85 43      451          STA  $43
1FEA:BD F6 14   452          LDA  IMGLOC-2,X
1FED:85 44      453          STA  $44
1FEF:85 46      454          STA  $46
1FF1:BD F7 14   455          LDA  IMGLOC-1,X
1FF4:85 45      456          STA  $45
1FF6:69 3C      457          ADC  #<15360
1FF8:85 47      458          STA  $47
1FFA:A4 20      459          LDY  LW
1FFC:C4 21      460 XLOOP    CPY  RW
1FFE:F0 02      461          BEQ  *+4
2000:10 CF      462          BPL  YLOOP
2002:B1 40      463          LDA  ($40),Y
2004:91 44      464          STA  ($44),Y
2006:A9 08      465          LDA  #8
```

```
2006:A9 08     465         LDA  #8
```

```
2008:85 50     466         STA  $50
200A:B1 42     467 SLOOP   LDA  ($42),Y
200C:91 46     468         STA  ($46),Y
200E:20 46 20  469         JSR  NXTOLD
2011:A5 47     470         LDA  $47
2013:69 04     471         ADC  #<1024
2015:85 47     472         STA  $47
2017:C6 50     473         DEC  $50
2019:D0 EF     474         BNE  SLOOP
201B:20 4E 20  475         JSR  BAKOLD
201E:38        476         SEC
201F:A5 47     477         LDA  $47
2021:E9 20     478         SBC  #<8192
2023:85 47     479         STA  $47
2025:C8        480         INY
2026:D0 D4     481         BNE  XLOOP
2028:A4 20     482 LASLIN  LDY  LW
202A:C4 21     483 BLOOP   CPY  RW
202C:F0 02     484         BEQ  *+4
202E:10 26     485         BPL  DONE
2030:A9 20     486         LDA  #32
2032:91 40     487         STA  ($40),Y
2034:A2 08     488         LDX  #8
2036:A9 00     489 SLOOP2  LDA  #0
2038:91 42     490         STA  ($42),Y
203A:20 46 20  491         JSR  NXTOLD
203D:CA        492         DEX
203E:D0 F6     493         BNE  SLOOP2
2040:20 4E 20  494         JSR  BAKOLD
2043:C8        495         INY
2044:D0 E4     496         BNE  BLOOP
2046:A5 43     497 NXTOLD  LDA  $43
2048:18        498         CLC
2049:69 04     499         ADC  #<1024
204B:85 43     500         STA  $43
204D:60        501         RTS
204E:38        502 BAKOLD  SEC
204F:A5 43     503         LDA  $43
2051:E9 20     504         SBC  #<8192
2053:85 43     505         STA  $43
2055:60        506         RTS
2056:A5 20     507 DONE    LDA  LW
2058:85 24     508         STA  HC
205A:A5 23     509         LDA  BW
205C:85 25     510         STA  VC
205E:60        511         RTS
205F:          512         CHN  MAIN6.ASM
```

```
205F:              2 ; WORD PROCESSING EDITOR MODULE
205F:              3 ;
205F:              4 WPEDIT   EQU  *
205F:A9 00         5          LDA  #0
2061:85 20         6          STA  LW
2063:A9 27         7          LDA  #39
2065:85 21         8          STA  RW
2067:A5 20         9          LDA  LW
2069:85 24        10          STA  HC
206B:2C E7 13     11          BIT  NEWRSP     ;EDIT OLD RESPONSE OR START NEW?
206E:10 1E        12          BPL  ELS000
2070:A5 25        13          LDA  VC         ;START NEW.
2072:18           14          CLC
2073:69 01        15          ADC  #1
2075:8D E8 13     16          STA  EDITY
2078:85 22        17          STA  TW
207A:18           18          CLC
207B:69 05        19          ADC  #5
207D:C9 18        20          CMP  #24
207F:30 02        21          BMI  *+4
2081:A9 17        22          LDA  #23
2083:85 23        23          STA  BW
2085:8D 83 10     24          STA  EDTBTM
2088:20 8C 1F     25          JSR  CLRWIN
208B:4C 98 20     26          JMP  EIF000
208E:             27 ELS000   EQU  *
208E:AD E8 13     28          LDA  EDITY      ;EDIT OLD.
2091:85 22        29          STA  TW
2093:AD 83 10     30          LDA  EDTBTM
2096:85 23        31          STA  BW
2098:             32 EIF000   EQU  *
2098:A5 22        33          LDA  TW
209A:85 25        34          STA  VC
209C:A9 00        35          LDA  #OVRWRT
209E:8D E9 13     36          STA  EDTMOD
20A1:A9 80        37          LDA  #$80
20A3:8D E6 14     38          STA  CASFLG
20A6:A9 00        39          LDA  #0
20A8:8D EB 14     40          STA  TYPRET
20AB:             41 SRC000   EQU  *
20AB:20 8A 23     42          JSR  GETCHR
20AE:A9 F0        43          LDA  #>15*16
20B0:A2 00        44          LDX  #<15*16
20B2:20 95 23     45          JSR  ADDTIM
20B5:20 CE 1D     46          JSR  KBDIN
20B8:90 06        47          BCC  *+8
20BA:20 DD FB     48          JSR  BELOUT
20BD:4C AB 20     49          JMP  SRC000
20C0:8D EA 13     50          STA  CHAR
20C3:AA           51          TAX
20C4:BD 28 15     52          LDA  CHRCLS,X
20C7:AA           53          TAX
20C8:BD A8 15     54          LDA  CLSTYP,X
20CB:8D EA 14     55          STA  CHRTYP
20CE:C9 01        56          CMP  #TXTTYP
20D0:F0 03        57          BEQ  *+5
20D2:4C 8F 21     58          JMP  CS0000
20D5:AD E9 13     59          LDA  EDTMOD
```

```
20D8:C9 00      60          CMP  #OVRWRT
20DA:D0 52      61          BNE  CS0100
20DC:A5 24      62          LDA  HC
20DE:C5 21      63          CMP  RW
20E0:D0 49      64          BNE  EIF001
20E2:AD EA 13   65          LDA  CHAR
20E5:C9 20      66          CMP  #32
20E7:F0 42      67          BEQ  EIF001
20E9:A5 23      68          LDA  BW
20EB:C5 25      69          CMP  VC
20ED:30 35      70          BMI  ELS002
20EF:20 3E 1E   71          JSR  FINDST
20F2:A5 21      72          LDA  RW
20F4:8D EC 13   73          STA  STSAVE
20F7:20 8E 22   74          JSR  SAVCLR
20FA:E6 25      75          INC  VC
20FC:2C EB 13   76          BIT  GOTBLK
20FF:10 19      77          BPL  ELS003
2101:A5 24      78          LDA  HC
2103:18         79          CLC
2104:69 01      80          ADC  #1
2106:C5 21      81          CMP  RW
2108:10 10      82          BPL  ELS003
210A:E6 24      83          INC  HC
210C:20 6F 1E   84          JSR  WRDWRP
210F:AD E4 14   85          LDA  WRDLEN
2112:85 24      86          STA  HC
2114:20 15 22   87          JSR  REWRIT
2117:4C 21 21   88          JMP  EIF003
211A:           89 ELS003   EQU  *
211A:A5 20      90          LDA  LW
211C:85 24      91          STA  HC
211E:20 15 22   92          JSR  REWRIT
2121:           93 EIF003   EQU  *
2121:4C 2B 21   94          JMP  EIF001
2124:           95 ELS002   EQU  *
2124:38         96          SEC
2125:6E EB 14   97          ROR  TYPRET
2128:4C 14 22   98          JMP  ESR000
212B:           99 EIF001   EQU  *
212B:4C 76 21  100          JMP  EC0100
212E:          101 CS0100   EQU  *
212E:A5 24     102          LDA  HC
2130:8D EC 13  103          STA  STSAVE
2133:20 8E 22  104          JSR  SAVCLR
2136:A5 24     105          LDA  HC
2138:C5 21     106          CMP  RW
213A:D0 29     107          BNE  INS1
213C:20 3E 1E  108          JSR  FINDST
213F:2C EB 13  109          BIT  GOTBLK
2142:10 05     110          BPL  INS4
2144:AD E4 14  111          LDA  WRDLEN
2147:D0 06     112          BNE  INS3
2149:A5 21     113 INS4     LDA  RW
214B:85 24     114          STA  HC
214D:D0 0E     115          BNE  INS2
214F:E6 24     116 INS3     INC  HC
2151:E6 25     117          INC  VC
```

```
2153:20 6F 1E  118         JSR   WRDWRP
2156:AD E4 14  119         LDA   WRDLEN
2159:85 24     120         STA   HC
215B:D0 08     121         BNE   INS1
215D:20 F0 1E  122 INS2    JSR   ADVCRS
2160:2C ED 13  123         BIT   HITEND
2163:30 08     124         BMI   INSEND
2165:20 F0 1E  125 INS1    JSR   ADVCRS
2168:2C ED 13  126         BIT   HITEND
216B:10 03     127         BPL   *+5
216D:4C 14 22  128 INSEND  JMP   ESR000
2170:20 15 22  129         JSR   REWRIT
2173:20 C4 1E  130         JSR   RETCRS
2176:          131 EC0100  EQU   *
2176:20 6D 1F  132         JSR   SCRADD
2179:AD EA 13  133         LDA   CHAR
217C:91 50     134         STA   ($50),Y
217E:20 21 1F  135         JSR   HIROUT
2181:20 F0 1E  136         JSR   ADVCRS
2184:2C ED 13  137         BIT   HITEND
2187:10 03     138         BPL   *+5
2189:4C 14 22  139         JMP   ESR000
218C:4C 11 22  140         JMP   EC0000
218F:          141 CS0000  EQU   *
218F:C9 04     142         CMP   #DELCHR
2191:D0 28     143         BNE   CS0001
2193:A5 24     144         LDA   HC
2195:8D EE 13  145         STA   OLDX
2198:20 C4 1E  146         JSR   RETCRS
219B:2C EF 13  147         BIT   HITBGN
219E:10 06     148         BPL   ELS005
21A0:20 DD FB  149         JSR   BELOUT
21A3:4C B8 21  150         JMP   EIF005
21A6:          151 ELS005  EQU   *
21A6:A5 24     152         LDA   HC
21A8:C5 21     153         CMP   RW
21AA:10 0C     154         BPL   EIF005
21AC:AD EE 13  155         LDA   OLDX
21AF:8D E6 13  156         STA   GTSAVE
21B2:20 8E 22  157         JSR   SAVCLR
21B5:20 15 22  158         JSR   REWRIT
21B8:          159 EIF005  EQU   *
21B8:4C 11 22  160         JMP   EC0000
21BB:          161 CS0001  EQU   *
21BB:C9 06     162         CMP   #MODTGL
21BD:D0 0B     163         BNE   CS0002
21BF:AD E9 13  164         LDA   EDTMOD
21C2:49 01     165         EOR   #$01
21C4:8D E9 13  166         STA   EDTMOD
21C7:4C 11 22  167         JMP   EC0000
21CA:          168 CS0002  EQU   *
21CA:C9 02     169         CMP   #BAKARO
21CC:D0 0E     170         BNE   CS0003
21CE:20 C4 1E  171         JSR   RETCRS
21D1:2C EF 13  172         BIT   HITBGN
21D4:10 03     173         BPL   *+5
21D6:20 DD FB  174         JSR   BELOUT
21D9:4C 11 22  175         JMP   EC0000
```

```
21DC:                176 CS0003  EQU  *
21DC:C9 03           177         CMP  #FWDARO
21DE:D0 12           178         BNE  CS0004
21E0:20 F0 1E        179         JSR  ADVCRS
21E3:2C ED 13        180         BIT  HITEND
21E6:F0 07           181         BEQ  *+9
21E8:38              182         SEC
21E9:6E EB 14        183         ROR  TYPRET
21EC:4C 14 22        184         JMP  ESR000
21EF:4C 11 22        185         JMP  EC0000
21F2:                186 CS0004  EQU  *
21F2:C9 06           187         CMP  #RETCHR
21F4:D0 07           188         BNE  CS0005
21F6:38              189         SEC
21F7:6E EB 14        190         ROR  TYPRET
21FA:4C 14 22        191         JMP  ESR000
21FD:                192 CS0005  EQU  *
21FD:C9 07           193         CMP  #CASTGL
21FF:D0 0D           194         BNE  CS0006
2201:AD E6 14        195         LDA  CASFLG
2204:49 FF           196         EOR  #$FF
2206:29 80           197         AND  #$80
2208:8D E6 14        198         STA  CASFLG
220B:4C 11 22        199         JMP  EC0000
220E:                200 CS0006  EQU  *
220E:20 DD FB        201         JSR  BELOUT
2211:                202 EC0000  EQU  *
2211:4C AB 20        203         JMP  SRC000
2214:                204 ESR000  EQU  *
2214:60              205         RTS
2215:                206 ;
2215:                207 ; REWRITE THE EDIT SCREEN FROM THE SCRATCH BUFFER
2215:                208 ;
2215:A5 24           209 REWRIT  LDA  HC
2217:48              210         PHA
2218:A5 25           211         LDA  VC
221A:48              212         PHA
221B:A2 00           213         LDX  #0
221D:8D F0 13        214         STA  LASCHR
2220:BD F2 13        215 REWLP   LDA  SCRBUF,X
2223:8D E3 14        216         STA  SCRCHR
2226:8A              217         TXA
2227:48              218         PHA
2228:AD E3 14        219         LDA  SCRCHR
222B:C9 20           220         CMP  #32
222D:D0 25           221         BNE  NOTBLK
222F:AD F0 13        222         LDA  LASCHR
2232:C9 20           223         CMP  #32
2234:F0 49           224         BEQ  NXTCHR
2236:20 6D 1F        225 PUTCH   JSR  SCRADD
2239:AD E3 14        226         LDA  SCRCHR
223C:8D F0 13        227         STA  LASCHR
223F:91 50           228         STA  ($50),Y
2241:20 21 1F        229         JSR  HIROUT
2244:20 F0 1E        230         JSR  ADVCRS
2247:2C ED 13        231         BIT  HITEND
224A:10 33           232         BPL  NXTCHR
224C:38              233 SCRFUL  SEC
```

```
224D:6E EB 14  234          ROR  TYPRET
2250:68        235          PLA
2251:4C 87 22  236          JMP  REWDUN
2254:A5 24     237 NOTBLK   LDA  HC
2256:C5 21     238          CMP  RW
2258:D0 DC     239          BNE  PUTCH
225A:A5 25     240          LDA  VC
225C:C5 23     241          CMP  BW
225E:F0 EC     242          BEQ  SCRFUL
2260:20 3E 1E  243          JSR  FINDST
2263:2C EB 13  244          BIT  GOTBLK
2266:10 0F     245          BPL  NOWRAP
2268:E6 25     246          INC  VC
226A:AD E4 14  247          LDA  WRDLEN
226D:F0 08     248          BEQ  NOWRAP
226F:E6 24     249          INC  HC
2271:20 6F 1E  250          JSR  WRDWRP
2274:AD E4 14  251          LDA  WRDLEN
2277:18        252 NOWRAP   CLC
2278:65 20     253          ADC  LW
227A:85 24     254          STA  HC
227C:4C 36 22  255          JMP  PUTCH
227F:68        256 NXTCHR   PLA
2280:AA        257          TAX
2281:E8        258          INX
2282:EC F1 13  259          CPX  BUFLEN
2285:D0 99     260          BNE  REWLP
2287:68        261 REWDUN   PLA
2288:85 25     262          STA  VC
228A:68        263          PLA
228B:85 24     264          STA  HC
228D:60        265          RTS
228E:          266 ;
228E:          267 ; SAVE EDIT WINDOW (FROM X=STSAVE,Y) IN
228E:          268 ;   SCRATCH BUFFER AND CLEAR FROM
228E:          269 ;   X=STSAVE,Y
228E:          270 ;
228E:          271 SAVCLR   EQU  *
228E:A9 00     272          LDA  #0
2290:8D F1 13  273          STA  BUFLEN
2293:A6 25     274          LDX  VC
2295:          275 WHL003   EQU  *
2295:E4 23     276          CPX  BW
2297:30 02     277          BMI  *+4
2299:D0 2F     278          BNE  EWH003
229B:8A        279          TXA
229C:48        280          PHA
229D:20 71 1F  281          JSR  SCRADD+4
22A0:AC EC 13  282          LDY  STSAVE
22A3:          283 WHL004   EQU  *
22A3:C4 21     284          CPY  RW
22A5:30 02     285          BMI  *+4
22A7:D0 16     286          BNE  EWH004
22A9:B1 50     287          LDA  ($50),Y
22AB:AE F1 13  288          LDX  BUFLEN
22AE:9D F2 13  289          STA  SCRBUF,X
22B1:A9 20     290          LDA  #32
22B3:91 50     291          STA  ($50),Y
```

```
22B3:91 50      291          STA  ($50),Y
```

```
22B5:20 21 1F   292          JSR  HIROUT
22B8:EE F1 13   293          INC  BUFLEN
22BB:C8         294          INY
22BC:4C A3 22   295          JMP  WHL004
22BF:           296 EWH004   EQU  *
22BF:A5 20      297          LDA  LW
22C1:8D EC 13   298          STA  STSAVE
22C4:68         299          PLA
22C5:AA         300          TAX
22C6:E8         301          INX
22C7:4C 95 22   302          JMP  WHL003
22CA:           303 EWH003   EQU  *
22CA:60         304          RTS
22CB:           305          CHN  MAIN7.ASM
```

```
22CB:              ; UTILITY SUBROUTINE MODULE
22CB:              ;
22CB:              ; CONVERT TWO DIGIT STRING TO DECIMAL
22CB:              ;
22CB:20 E0 22      ASCDEC  JSR  CVTSET
22CE:B0 03                 BCS  *+5
22D0:2A                    ROL  A
22D1:65 56                 ADC  $56
22D3:60                    RTS
22D4:              ;
22D4:              ; CONVERT TWO DIGIT STRING TO BINARY
22D4:              ;
22D4:20 E0 22      ASCBIN  JSR  CVTSET
22D7:B0 06                 BCS  *+8
22D9:65 5A                 ADC  $5A
22DB:65 5A                 ADC  $5A
22DD:65 56                 ADC  $56
22DF:60                    RTS
22E0:              ;
22E0:              ; BEGIN CONVERSION OF STRING TO BINARY
22E0:              ;
22E0:20 0F 23      CVTSET  JSR  PTRSET
22E3:C9 02                 CMP  #2
22E5:F0 02                 BEQ  *+4
22E7:38                    SEC
22E8:60                    RTS
22E9:A8                    TAY
22EA:88                    DEY
22EB:B1 50                 LDA  ($50),Y
22ED:20 02 23              JSR  GETDGT
22F0:B0 0F                 BCS  CVTRTS
22F2:85 56                 STA  $56
22F4:88                    DEY
22F5:B1 50                 LDA  ($50),Y
22F7:20 02 23              JSR  GETDGT
22FA:B0 05                 BCS  CVTRTS
22FC:85 5A                 STA  $5A
22FE:2A                    ROL  A
22FF:2A                    ROL  A
2300:2A                    ROL  A
2301:60            CVTRTS  RTS
2302:              ;
2302:              ; CONVERT ASCII DIGIT TO BINARY
2302:              ;
2302:C9 3A         GETDGT  CMP  #48+10
2304:38                    SEC
2305:30 01                 BMI  *+3
2307:60                    RTS
2308:E9 30                 SBC  #48
230A:18                    CLC
230B:10 01                 BPL  *+3
230D:38                    SEC
230E:60                    RTS
230F:              ;
230F:              ; SET UP PAGE 0 POINTER TO STUDENT DATA
230F:              ;
230F:B9 AC 12      PTRSET  LDA  STUTXT,Y
2312:85 50                 STA  $50
```

```
2314:C8                   INY
2315:B9 AC 12             LDA  STUTXT,Y
2318:85 51                STA  $51
231A:C8                   INY
231B:B9 AC 12             LDA  STUTXT,Y
231E:85 56                STA  $56
2320:60                   RTS
2321:          ;
2321:          ; MOVE CHAR'S
2321:          ;
2321:A4 56      MOVE      LDY  $56          ;NOTE - MOVES BACKWARDS
2323:88         MVLOOP    DEY
2324:F0 07                BEQ  MOVDUN
2326:B1 50                LDA  ($50),Y
2328:91 52                STA  ($52),Y
232A:4C 23 23             JMP  MVLOOP
232D:B1 50      MOVDUN    LDA  ($50),Y
232F:91 52                STA  ($52),Y
2331:60                   RTS
2332:          ;
2332:          ; WAIT # SEC'S IN A
2332:          ;
2332:F0 1C      WAIT      BEQ  WATDUN
2334:8D C9 15             STA  NSECS
2337:A9 04      SECLP     LDA  #4
2339:8D E7 14             STA  COUNT
233C:A0 FA      QTRLP     LDY  #250
233E:A6 C7      WT1       LDX  $C7          ;1 MS DELAY
2340:CA                   DEX
2341:D0 FD                BNE  WT1+2
2343:88                   DEY
2344:D0 F8                BNE  WT1
2346:CE E7 14             DEC  COUNT
2349:D0 F1                BNE  QTRLP
234B:CE C9 15             DEC  NSECS
234E:D0 E7                BNE  SECLP
2350:60         WATDUN    RTS
2351:          ;
2351:          ; WAIT FOR KID TO TYPE CR
2351:          ;    ON RETURN, CARRY CLEAR IF CR READ,
2351:          ;    SET IF TIMED OUT
2351:          ;
2351:AD 00 C0   WAITCR    LDA  $C000
2354:C9 FF                CMP  #$FF
2356:F0 07                BEQ  *+9
2358:C9 8D                CMP  #$8D
235A:D0 03                BNE  *+5
235C:18                   CLC
235D:90 08                BCC  GOTRET       ;GOT A CR
235F:20 7F 23             JSR  GETCUR
2362:20 AD 23             JSR  CHKCHR
2365:90 EA                BCC  WAITCR
2367:A9 00      GOTRET    LDA  #0
2369:8D 10 C0             STA  $C010
236C:60                   RTS
236D:          ;
236D:          ; READ TIME FROM CLOCK
236D:          ;    $50-$51 MUST CONTAIN ADDR OF RESULT
```

```
236D:            118 ;
236D:A0 03       119 RDTIME  LDY  #3
236F:B9 D0 C0    120         LDA  CLOCK,Y
2372:91 52       121         STA  ($52),Y
2374:88          122         DEY
2375:D0 F8       123         BNE  RDTIME+2
2377:B9 D0 C0    124         LDA  CLOCK,Y
237A:29 1F       125         AND  #$1F      ;MASK OUT INTER, LEAP YR BITS, LAST BYTE
237C:91 52       126         STA  ($52),Y
237E:60          127         RTS
237F:            128 ;
237F:            129 ; READ CURRENT TIME ('CURTIM')
237F:            130 ;
237F:A9 B5       131 GETCUR  LDA  #>CURTIM
2381:85 52       132         STA  $52
2383:A9 15       133         LDA  #<CURTIM
2385:85 53       134         STA  $53
2387:4C 6D 23    135         JMP  RDTIME
238A:            136 ;
238A:            137 ; READ TIME BETWEEN CHARS ('CHRTIM')
238A:            138 ;
238A:A9 B9       139 GETCHR  LDA  #>CHRTIM
238C:85 52       140         STA  $52
238E:A9 15       141         LDA  #<CHRTIM
2390:85 53       142         STA  $53
2392:4C 6D 23    143         JMP  RDTIME
2395:            144 ;
2395:            145 ; ADD A NUMBER OF SEC'S (*16) TO A TIME VARIABLE
2395:            146 ;   A = LO, X = HI BYTES OF # SEC'S * 16
2395:            147 ;   I.E., 20 MIN'S = 20 * 60 * 16
2395:            148 ;   $52-$53 MUST ADDR VAR TO ADD TO
2395:            149 ;
2395:A0 03       150 ADDTIM  LDY  #3
2397:18          151         CLC
2398:71 52       152         ADC  ($52),Y
239A:91 52       153         STA  ($52),Y
239C:88          154         DEY
239D:8A          155         TXA
239E:71 52       156         ADC  ($52),Y
23A0:91 52       157         STA  ($52),Y
23A2:20 A5 23    158         JSR  *+3
23A5:88          159         DEY
23A6:B1 52       160         LDA  ($52),Y
23A8:69 00       161         ADC  #0
23AA:91 52       162         STA  ($52),Y
23AC:60          163         RTS
23AD:            164 ;
23AD:            165 ; COMPARE CURR TIME TO TIME BETWEEN CHARS
23AD:            166 ;   CARRY SET IF CURR TIME >=
23AD:            167 ;
23AD:A0 00       168 CHKCHR  LDY  #0
23AF:B9 B5 15    169         LDA  CURTIM,Y
23B2:D9 B9 15    170         CMP  CHRTIM,Y
23B5:D0 06       171         BNE  TIMDIF
23B7:C8          172         INY
23B8:C0 04       173         CPY  #4
23BA:D0 F3       174         BNE  CHKCHR+2
23BC:38          175         SEC
```

```
23BD:60        176 TIMDIF  RTS
23BE:          177 ;
23BE:          178 ; SEE IF 20 MINUTES SINCE START
23BE:          179 ;
23BE:A0 00     180 CHK20   LDY  #0
23C0:B9 B5 15  181         LDA  CURTIM,Y
23C3:D9 C1 15  182         CMP  TWEMIN,Y
23C6:D0 06     183         BNE  DIFF20
23C8:C8        184         INY
23C9:C0 04     185         CPY  #4
23CB:D0 F3     186         BNE  CHK20+2
23CD:38        187         SEC
23CE:60        188 DIFF20  RTS
23CF:          189 ;
23CF:          190 ; SEE IF 10 MINUTES SINCE START
23CF:          191 ;
23CF:A0 00     192 CHK10   LDY  #0
23D1:B9 B5 15  193         LDA  CURTIM,Y
23D4:D9 BD 15  194         CMP  TENMIN,Y
23D7:D0 06     195         BNE  DIFF10
23D9:C8        196         INY
23DA:C0 04     197         CPY  #4
23DC:D0 F3     198         BNE  CHK10+2
23DE:38        199         SEC
23DF:60        200 DIFF10  RTS
23E0:          201 ;
23E0:          202 ; DECODE AN INTEGER
23E0:          203 ;
23E0:A9 00     204 DECODE  LDA  #0
23E2:8D CE 15  205         STA  RESULT
23E5:8D CF 15  206         STA  RESULT+1
23E8:8D D1 15  207         STA  DGTPTR
23EB:AC D1 15  208 DECOLP  LDY  DGTPTR
23EE:CC D0 15  209         CPY  NDGTS
23F1:10 59     210         BPL  DECDUN
23F3:B1 54     211         LDA  ($54),Y
23F5:C9 3A     212         CMP  #48+10    ;> ASCII '9'
23F7:10 5C     213         BPL  BADNUM+1
23F9:38        214         SEC
23FA:E9 30     215         SBC  #48
23FC:30 57     216         BMI  BADNUM+1  ;< ASCII '0'
23FE:48        217         PHA
23FF:AD CE 15  218         LDA  RESULT
2402:AC CF 15  219         LDY  RESULT+1
2405:18        220         CLC
2406:2A        221         ROL  A
2407:AA        222         TAX
2408:98        223         TYA
2409:2A        224         ROL  A
240A:A8        225         TAY
240B:B0 47     226         BCS  BADNUM
240D:8A        227         TXA
240E:2A        228         ROL  A
240F:AA        229         TAX
2410:98        230         TYA
2411:2A        231         ROL  A
2412:A8        232         TAY
2413:B0 3F     233         BCS  BADNUM
```

```
2415:8A         234         TXA
2416:2A         235         ROL  A
2417:AA         236         TAX
2418:98         237         TYA
2419:2A         238         ROL  A
241A:A8         239         TAY
241B:B0 37      240         BCS  BADNUM
241D:8A         241         TXA
241E:6D CE 15   242         ADC  RESULT
2421:AA         243         TAX
2422:98         244         TYA
2423:6D CF 15   245         ADC  RESULT+1
2426:B0 2C      246         BCS  BADNUM
2428:A8         247         TAY
2429:8A         248         TXA
242A:6D CE 15   249         ADC  RESULT
242D:8D CE 15   250         STA  RESULT
2430:98         251         TYA
2431:6D CF 15   252         ADC  RESULT+1
2434:A8         253         TAY
2435:B0 1D      254         BCS  BADNUM
2437:68         255         PLA
2438:6D CE 15   256         ADC  RESULT
243B:8D CE 15   257         STA  RESULT
243E:98         258         TYA
243F:69 00      259         ADC  #0
2441:B0 11      260         BCS  BADNUM
2443:8D CF 15   261         STA  RESULT+1
2446:EE D1 15   262         INC  DGTPTR
2449:4C EB 23   263         JMP  DECOLP
244C:18         264 DECDUN  CLC
244D:AE CE 15   265         LDX  RESULT
2450:AC CF 15   266         LDY  RESULT+1
2453:60         267         RTS
2454:68         268 BADNUM  PLA
2455:38         269         SEC
2456:60         270         RTS
2457:           271         CHN  MAIN8.ASM
```

```
2457:              ; PRACTICE ROUTINE MODULE
2457:              ;
2457:20 7E 1F      PRARTN  JSR  CLRSCR
245A:A9 03                 LDA  #3
245C:85 20                 STA  LW
245E:85 24                 STA  HC
2460:A9 02                 LDA  #2
2462:85 25                 STA  VC
2464:AD 80 10              LDA  CURPRA
2467:AE 7C 10              LDX  PART
246A:DD 49 11              CMP  PRAITM-65,X
246D:30 05                 BMI  *+7
246F:A9 00                 LDA  #0
2471:8D 80 10              STA  CURPRA
2474:EE 80 10              INC  CURPRA
2477:BD 15 11              LDA  PRALNS-65,X
247A:8D F1 14              STA  NSENTS
247D:0A                    ASL  A
247E:6D F1 14              ADC  NSENTS
2481:8D F2 14              STA  LASSNT
2484:A9 00                 LDA  #0
2486:A2 39                 LDX  #3*MAXCUE*MAXSNT-3
2488:9D D8 12      ZROCUE  STA  CUETXT+2,X ;SET CUE LENGTHS TO 0 (NO CUE)
248B:CA                    DEX
248C:CA                    DEX
248D:CA                    DEX
248E:D0 F8                 BNE  ZROCUE
2490:9D D8 12              STA  CUETXT+2,X
2493:A2 39                 LDX  #3*MAXADL*MAXSNT-3
2495:9D 14 13      ZROADL  STA  ADLTXT+2,X ;SET ADD'L TEXT LENGTHS TO 0 (NONE)
2498:CA                    DEX
2499:CA                    DEX
249A:CA                    DEX
249B:D0 F8                 BNE  ZROADL
249D:9D 14 13              STA  ADLTXT+2,X
24A0:AA                    TAX
24A1:8E E7 14              STX  COUNT
24A4:8A            SENTLP  TXA
24A5:CD F2 14              CMP  LASSNT
24A8:10 31                 BPL  GOTPRA
24AA:BD 04 12              LDA  PRATXT,X
24AD:18                    CLC
24AE:69 02                 ADC  #2
24B0:85 50                 STA  $50
24B2:BD 05 12              LDA  PRATXT+1,X
24B5:69 00                 ADC  #0
24B7:85 51                 STA  $51
24B9:A9 02                 LDA  #2
24BB:20 E3 22              JSR  CVTSET+3
24BE:90 03                 BCC  *+5
24C0:20 A2 2F              JSR  FATAL
24C3:65 5A                 ADC  $5A
24C5:65 5A                 ADC  $5A
24C7:65 56                 ADC  $56
24C9:CD 80 10              CMP  CURPRA
24CC:30 07                 BMI  NXTSNT
24CE:F0 02                 BEQ  *+4
24D0:10 09                 BPL  GOTPRA
```

```
24D2:EE E7 14              INC  COUNT
24D5:E8           NXTSNT   INX
24D6:E8                    INX
24D7:E8                    INX
24D8:4C A4 24              JMP  SENTLP
24DB:AD E7 14     GOTPRA   LDA  COUNT
24DE:D0 03                 BNE  *+5
24E0:20 A2 2F              JSR  FATAL
24E3:8D F0 14              STA  NITEMS
24E6:0A                    ASL  A
24E7:6D E7 14              ADC  COUNT
24EA:85 59                 STA  $59
24EC:8A                    TXA
24ED:38                    SEC
24EE:E5 59                 SBC  $59
24F0:8D 85 10              STA  PRANDX
24F3:AA                    TAX
24F4:A9 00                 LDA  #0
24F6:85 59                 STA  $59         ;ITMTXT INDEX
24F8:85 5A                 STA  $5A         ;CUETXT INDEX
24FA:AD F6 14              LDA  WRKSPC      ;NEXT TEXT LOC FOR CONVERTED SENT
24FD:85 52                 STA  $52
24FF:AD F7 14              LDA  WRKSPC+1
2502:85 53                 STA  $53
2504:BD 04 12     CONVLP   LDA  PRATXT,X    ;GET LOC NEXT SENT IN ITEM
2507:18                    CLC
2508:69 06                 ADC  #6
250A:85 50                 STA  $50
250C:BD 05 12              LDA  PRATXT+1,X
250F:69 00                 ADC  #0
2511:85 51                 STA  $51
2513:BD 06 12              LDA  PRATXT+2,X
2516:38                    SEC
2517:E9 06                 SBC  #6
2519:85 56                 STA  $56         ;GET LENGTH INTERNAL SENTENCE
251B:A4 59                 LDY  $59
251D:A5 52                 LDA  $52
251F:99 C7 12              STA  ITMTXT,Y
2522:A5 53                 LDA  $53
2524:99 C8 12              STA  ITMTXT+1,Y
2527:A9 20                 LDA  #32
2529:8D F0 13              STA  LASCHR
252C:A9 00                 LDA  #0
252E:85 57                 STA  $57         ;INTERNAL SENTENCE INDEX
2530:85 58                 STA  $58         ;DISPLAY SENTENCE INDEX
2532:A4 57        RMVLP    LDY  $57
2534:C4 56                 CPY  $56
2536:10 54                 BPL  RMVDUN
2538:E6 57                 INC  $57
253A:B1 50                 LDA  ($50),Y
253C:48                    PHA
253D:A8                    TAY
253E:B9 28 15              LDA  CHRCLS,Y
2541:A8                    TAY
2542:B9 A8 15              LDA  CLSTYP,Y
2545:C9 01                 CMP  #TXTTYP
2547:F0 2D                 BEQ  TXTCHR
2549:68                    PLA
```

```
254A:C9 28                CMP  #40
254C:F0 3E                BEQ  RMVDUN
254E:C9 2F                CMP  #47        ;'/' (START OF ADD'L TEXT)?
2550:F0 3A                BEQ  RMVDUN
2552:C9 24                CMP  #36        ;'$' (=SOMETHING)?
2554:D0 DC                BNE  RMVLP
2556:48                   PHA
2557:8A                   TXA
2558:48                   PHA
2559:A2 00                LDX  #0
255B:AD F0 13             LDA  LASCHR
255E:C9 20                CMP  #32
2560:D0 01                BNE  *+3
2562:E8                   INX
2563:A4 58                LDY  $58
2565:BD 90 13     SOMELP  LDA  SUMTHG,X
2568:C8                   INY
2569:84 58                STY  $58
256B:91 52                STA  ($52),Y
256D:E8                   INX
256E:E0 0B                CPX  #11
2570:D0 F3                BNE  SOMELP
2572:E6 58                INC  $58
2574:68                   PLA
2575:AA                   TAX
2576:68           TXTCHR  PLA
2577:C9 20                CMP  #32
2579:D0 05                BNE  SNTCHR
257B:CD F0 13             CMP  LASCHR
257E:F0 B2                BEQ  RMVLP
2580:A4 58        SNTCHR  LDY  $58
2582:E6 58                INC  $58
2584:91 52                STA  ($52),Y
2586:8D F0 13             STA  LASCHR
2589:4C 32 25             JMP  RMVLP
258C:C6 58        RMVDUN  DEC  $58
258E:A4 58                LDY  $58
2590:B1 52                LDA  ($52),Y
2592:C9 2E                CMP  #46
2594:F0 0B                BEQ  GOTPD
2596:C9 20                CMP  #32
2598:F0 03                BEQ  STORPD
259A:E6 58                INC  $58
259C:C8                   INY
259D:A9 2E        STORPD  LDA  #46
259F:91 52                STA  ($52),Y
25A1:C8           GOTPD   INY
25A2:E6 58                INC  $58
25A4:A0 00                LDY  #0
25A6:B1 52                LDA  ($52),Y
25A8:48                   PHA
25A9:A8                   TAY
25AA:B9 28 15             LDA  CHRCLS,Y
25AD:C9 01                CMP  #1         ;1ST CHAR LOWER CASE?
25AF:D0 0B                BNE  NOTLC
25B1:68                   PLA
25B2:38                   SEC
25B3:E9 20                SBC  #32
```

```
25B5:A0 00      176             LDY  #0
25B7:91 52      177             STA  ($52),Y
25B9:4C BD 25   178             JMP  NOTLC+1
25BC:68         179 NOTLC       PLA
25BD:8A         180             TXA
25BE:48         181             PHA
25BF:A5 5A      182             LDA  $5A
25C1:85 5B      183             STA  $5B
25C3:A0 00      184             LDY  #0
25C5:84 57      185             STY  $57
25C7:8C F3 14   186             STY  NCUES
25CA:8C 84 10   187             STY  CUELEN
25CD:8C D2 15   188             STY  CUESTA
25D0:B1 50      189 CUELP       LDA  ($50),Y
25D2:29 7F      190             AND  #$7F
25D4:8D EA 13   191             STA  CHAR
25D7:A8         192             TAY
25D8:B9 28 15   193             LDA  CHRCLS,Y
25DB:A8         194             TAY
25DC:B9 A8 15   195             LDA  CLSTYP,Y
25DF:C9 01      196             CMP  #TXTTYP
25E1:F0 67      197             BEQ  CUECHR
25E3:AD EA 13   198             LDA  CHAR
25E6:C9 28      199             CMP  #40        ;'(' - START OF CUE STRING?
25E8:D0 1E      200             BNE  RITPAR
25EA:AD D2 15   201             LDA  CUESTA
25ED:F0 03      202             BEQ  *+5
25EF:20 A2 2F   203             JSR  FATAL
25F2:EE D2 15   204             INC  CUESTA
25F5:A4 58      205             LDY  $58
25F7:A9 20      206             LDA  #32
25F9:91 52      207             STA  ($52),Y
25FB:C8         208             INY
25FC:91 52      209             STA  ($52),Y
25FE:C8         210             INY
25FF:A9 28      211             LDA  #40
2601:91 52      212             STA  ($52),Y
2603:C8         213             INY
2604:84 58      214             STY  $58
2606:D0 7D      215             BNE  NXTQCH
2608:C9 29      216 RITPAR      CMP  #41        ;')'- END OF CUE STRING?
260A:D0 19      217             BNE  EQSIGN
260C:AD D2 15   218             LDA  CUESTA
260F:D0 03      219             BNE  *+5
2611:20 A2 2F   220             JSR  FATAL
2614:20 7D 29   221             JSR  ENDCUE
2617:A4 58      222             LDY  $58
2619:A9 29      223             LDA  #41
261B:91 52      224             STA  ($52),Y
261D:E6 58      225             INC  $58
261F:EE F3 14   226             INC  NCUES
2622:4C 90 26   227             JMP  GOTCUE
2625:C9 3D      228 EQSIGN      CMP  #61        ;'=' - CUE DIVIDER?
2627:D0 5C      229             BNE  NXTQCH
2629:20 7D 29   230             JSR  ENDCUE
262C:A4 58      231             LDY  $58
262E:A9 29      232             LDA  #41
2630:91 52      233             STA  ($52),Y
```

```
2632:C8          234          INY
2633:A9 20       235          LDA  #32
2635:91 52       236          STA  ($52),Y
2637:C8          237          INY
2638:A9 28       238          LDA  #40
263A:91 52       239          STA  ($52),Y
263C:C8          240          INY
263D:85 58       241          STA  $58
263F:EE F3 14    242          INC  NCUES
2642:A2 01       243          LDX  #1
2644:8E D2 15    244          STX  CUESTA
2647:4C 85 26    245          JMP  NXTQCH
264A:AD D2 15    246 CUECHR   LDA  CUESTA
264D:F0 36       247          BEQ  NXTQCH
264F:C9 01       248          CMP  #1
2651:D0 2C       249          BNE  STATE2
2653:A6 58       250          LDX  $58      ;MAKE CUETXT POINT TO CUE STRING IN ORIG SENT
2655:A5 57       251          LDA  $57
2657:38          252          SEC
2658:E9 01       253          SBC  #1
265A:18          254          CLC
265B:65 50       255          ADC  $50
265D:9D D6 12    256          STA  CUETXT,X
2660:A5 51       257          LDA  $51
2662:69 00       258          ADC  #0
2664:9D D7 12    259          STA  CUETXT+1,X
2667:AD EA 13    260          LDA  CHAR
266A:C9 20       261          CMP  #32
266C:F0 17       262          BEQ  NXTQCH
266E:A2 02       263          LDX  #2
2670:8E D2 15    264          STX  CUESTA
2673:A4 58       265 PUTCUE   LDY  $58
2675:91 52       266          STA  ($52),Y
2677:EE 84 10    267          INC  CUELEN
267A:E6 58       268          INC  $58
267C:4C 85 26    269          JMP  NXTQCH
267F:AD EA 13    270 STATE2   LDA  CHAR
2682:4C 73 26    271          JMP  PUTCUE
2685:A4 57       272 NXTQCH   LDY  $57
2687:E6 57       273          INC  $57
2689:C4 56       274          CPY  $56
268B:F0 03       275          BEQ  *+5
268D:4C D0 25    276          JMP  CUELP
2690:68          277 GOTCUE   PLA
2691:AA          278          TAX
2692:A4 58       279          LDY  $58
2694:E6 58       280          INC  $58
2696:A9 2B       281          LDA  #43
2698:91 52       282          STA  ($52),Y
269A:A4 59       283          LDY  $59
269C:A5 58       284          LDA  $58
269E:99 C9 12    285          STA  ITMTXT+2,Y
26A1:38          286          SEC
26A2:65 52       287          ADC  $52
26A4:85 52       288          STA  $52
26A6:8D CB 15    289          STA  NXTTXT
26A9:A5 53       290          LDA  $53
26AB:69 00       291          ADC  #0
```

```
26AD:85 53      292            STA  $53
26AF:8D CC 15   293            STA  NXTTXT+1
26B2:C8         294            INY
26B3:C8         295            INY
26B4:C8         296            INY
26B5:84 59      297            STY  $59
26B7:CE E7 14   298            DEC  COUNT
26BA:F0 0D      299            BEQ  CNVDUN
26BC:E8         300            INX
26BD:E8         301            INX
26BE:E8         302            INX
26BF:A5 5A      303            LDA  $5A
26C1:18         304            CLC
26C2:69 0C      305            ADC  #3*MAXCUE
26C4:85 5A      306            STA  $5A
26C6:4C 04 25   307            JMP  CONVLP
26C9:AD F0 14   308 CNVDUN     LDA  NITEMS
26CC:85 59      309            STA  $59
26CE:0A         310            ASL  A
26CF:65 59      311            ADC  $59
26D1:85 59      312            STA  $59
26D3:A9 03      313            LDA  #3
26D5:85 20      314            STA  LW
26D7:85 24      315            STA  HC
26D9:A9 02      316            LDA  #2
26DB:85 25      317            STA  VC
26DD:A9 00      318            LDA  #0
26DF:85 5A      319            STA  $5A
26E1:AA         320            TAX
26E2:BD C9 12   321 PRTLP      LDA  ITMTXT+2,X
26E5:48         322            PHA
26E6:BD C8 12   323            LDA  ITMTXT+1,X
26E9:48         324            PHA
26EA:BC C7 12   325            LDY  ITMTXT,X
26ED:68         326            PLA
26EE:AA         327            TAX
26EF:68         328            PLA
26F0:20 0D 1D   329            JSR  DSPSTR
26F3:A6 5A      330            LDX  $5A
26F5:E8         331            INX
26F6:E8         332            INX
26F7:E8         333            INX
26F8:86 5A      334            STX  $5A
26FA:E4 59      335            CPX  $59
26FC:30 E4      336            BMI  PRTLP
26FE:AD CB 15   337            LDA  NXTTXT    ;PTR TO INTERMED FORM COMBINED SENT
2701:85 50      338            STA  $50
2703:AD CC 15   339            LDA  NXTTXT+1
2706:85 51      340            STA  $51
2708:AE 85 10   341            LDX  PRANDX
270B:BD 04 12   342            LDA  PRATXT,X  ;PTR TO 1ST SENT TO COMBINE, EACH PASS
270E:18         343            CLC
270F:69 06      344            ADC  #6
2711:85 52      345            STA  $52
2713:BD 05 12   346            LDA  PRATXT+1,X
2716:69 00      347            ADC  #0
2718:85 53      348            STA  $53
271A:BD 06 12   349            LDA  PRATXT+2,X
```

```
271D:38         350          SEC
271E:E9 06      351          SBC  #6
2720:85 44      352          STA  $44       ;LEN 1ST SENT
2722:AD 85 10   353          LDA  PRANDX
2725:18         354          CLC
2726:69 03      355          ADC  #3
2728:85 5A      356          STA  $5A       ;INDEX TO 2ND SENT'S TO COMBINE
272A:AD F0 14   357          LDA  NITEMS
272D:0A         358          ASL  A
272E:6D F0 14   359          ADC  NITEMS
2731:85 4C      360          STA  $4C       ;MAIN LP TERMIN VAR
2733:A9 0C      361          LDA  #3*MAXCUE ;CUETXT INDEX
2735:85 46      362          STA  $46
2737:A9 0C      363          LDA  #3*MAXADL
2739:85 49      364          STA  $49
273B:A5 59      365          LDA  $59
273D:18         366          CLC
273E:6D 85 10   367          ADC  PRANDX
2741:85 59      368          STA  $59
2743:A0 00      369 CMBILP   LDY  #0
2745:84 41      370          STY  $41       ;1ST SENT INDEX
2747:84 42      371          STY  $42       ;2ND SENT INDEX
2749:84 43      372          STY  $43       ;INTERMED SENT INDEX
274B:B1 52      373 COM1LP   LDA  ($52),Y
274D:C9 26      374          CMP  #38       ;'&' (2ND SENT GOES HERE)?
274F:D0 04      375          BNE  *+6
2751:C8         376          INY
2752:4C 73 27   377          JMP  COM1DN
2755:C9 28      378          CMP  #40
2757:F0 04      379          BEQ  *+6
2759:C9 2F      380          CMP  #47
275B:D0 05      381          BNE  *+7
275D:A4 44      382          LDY  $44
275F:4C 73 27   383          JMP  COM1DN
2762:84 41      384          STY  $41
2764:A4 43      385          LDY  $43
2766:91 50      386          STA  ($50),Y
2768:C8         387          INY
2769:84 43      388          STY  $43
276B:E6 41      389          INC  $41
276D:A4 41      390          LDY  $41
276F:C4 44      391          CPY  $44
2771:D0 D8      392          BNE  COM1LP
2773:84 41      393 COM1DN   STY  $41
2775:A4 5A      394          LDY  $5A
2777:B9 04 12   395          LDA  PRATXT,Y  ;GET LOC, LEN 2ND SENT
277A:18         396          CLC
277B:69 06      397          ADC  #6
277D:85 56      398          STA  $56
277F:B9 05 12   399          LDA  PRATXT+1,Y
2782:69 00      400          ADC  #0
2784:85 57      401          STA  $57
2786:B9 06 12   402          LDA  PRATXT+2,Y
2789:38         403          SEC
278A:E9 06      404          SBC  #6
278C:85 45      405          STA  $45
278E:C8         406          INY
278F:C8         407          INY
```

```
2790:C8          408          INY
2791:84 5A       409          STY  $5A
2793:A0 00       410          LDY  #FALSE
2795:8C F5 14    411          STY  RMVON
2798:A0 00       412          LDY  #0
279A:84 42       413          STY  $42
279C:A5 46       414 COM2LP   LDA  $46
279E:85 47       415          STA  $47
27A0:A5 49       416          LDA  $49
27A2:85 4A       417          STA  $4A
27A4:B1 56       418          LDA  ($56),Y
27A6:8D EA 13    419          STA  CHAR
27A9:AA          420          TAX
27AA:BD 28 15    421          LDA  CHRCLS,X
27AD:AA          422          TAX
27AE:BD A8 15    423          LDA  CLSTYP,X
27B1:C9 01       424          CMP  #TXTTYP
27B3:D0 03       425          BNE  *+5
27B5:4C 60 28    426          JMP  SNTTX2
27B8:AD EA 13    427          LDA  CHAR
27BB:C9 3C       428          CMP  #60        ;'<' (START DELETION)?
27BD:D0 11       429          BNE  NOTDEL
27BF:AD F5 14    430          LDA  RMVON      ;BAD NEWS IF DEL MODE ALREADY
27C2:C9 00       431          CMP  #FALSE
27C4:F0 03       432          BEQ  *+5
27C6:20 A2 2F    433          JSR  FATAL
27C9:A9 00       434          LDA  #TRUE
27CB:8D F5 14    435          STA  RMVON
27CE:D0 7F       436          BNE  NXTOL1
27D0:C9 3E       437 NOTDEL   CMP  #62        ;'>' (END OF DEL)?
27D2:D0 11       438          BNE  CHKAST
27D4:AD F5 14    439          LDA  RMVON
27D7:C9 00       440          CMP  #TRUE
27D9:F0 03       441          BEQ  *+5
27DB:20 A2 2F    442          JSR  FATAL
27DE:A9 00       443          LDA  #FALSE
27E0:8D F5 14    444          STA  RMVON
27E3:F0 6A       445          BEQ  NXTOL1
27E5:C9 2A       446 CHKAST   CMP  #42        ;'*' (CUE LOC, 2ND SENT)?
27E7:D0 34       447          BNE  CHKPLU
27E9:A4 47       448          LDY  $47
27EB:B9 D8 12    449          LDA  CUETXT+2,Y
27EE:D0 03       450          BNE  *+5        ;ANY MATCHING CUE-TEXT?
27F0:20 A2 2F    451          JSR  FATAL
27F3:C9 FF       452          CMP  #$FF
27F5:F0 58       453          BEQ  NXTOL1     ;IF =, CUE IS 'JUST JOIN'
27F7:AA          454          TAX
27F8:B9 D6 12    455          LDA  CUETXT,Y
27FB:85 54       456          STA  $54
27FD:B9 D7 12    457          LDA  CUETXT+1,Y
2800:85 55       458          STA  $55
2802:C8          459          INY
2803:C8          460          INY
2804:C8          461          INY
2805:84 47       462          STY  $47
2807:A0 00       463          LDY  #0
2809:B1 54       464 MOVCUE   LDA  ($54),Y
280B:84 48       465          STY  $48
```

```
280D:A4 43      466          LDY  $43
280F:91 50      467          STA  ($50),Y
2811:E6 43      468          INC  $43
2813:CA         469          DEX
2814:F0 39      470          BEQ  NXTOL1
2816:A4 48      471          LDY  $48
2818:C8         472          INY
2819:D0 EE      473          BNE  MOVCUE
281B:F0 32      474          BEQ  NXTOL1
281D:C9 2B      475 CHKPLU   CMP  #43        ;'+' (ADD'L TEXT LOC, 2ND SENT)?
281F:D0 39      476          BNE  CHKLPA
2821:A4 4A      477          LDY  $4A
2823:B9 14 13   478          LDA  ADLTXT+2,Y
2826:F0 03      479          BEQ  *+5        ;ANY MATCHING ADD'L TEXT?
2828:20 A2 2F   480          JSR  FATAL
282B:AA         481          TAX
282C:B9 12 13   482          LDA  ADLTXT,Y
282F:85 54      483          STA  $54
2831:B9 13 13   484          LDA  ADLTXT+1,Y
2834:85 55      485          STA  $55
2836:C8         486          INY
2837:C8         487          INY
2838:C8         488          INY
2839:84 4A      489          STY  $4A
283B:A0 00      490          LDY  #0
283D:B1 54      491 MOVADL   LDA  ($54),Y
283F:84 48      492          STY  $48
2841:A4 43      493          LDY  $43
2843:91 50      494          STA  ($50),Y
2845:E6 43      495          INC  $43
2847:CA         496          DEX
2848:F0 05      497          BEQ  NXTOL1
284A:A4 48      498          LDY  $48
284C:C8         499          INY
284D:D0 EE      500          BNE  MOVADL
284F:E6 42      501 NXTOL1   INC  $42
2851:A4 42      502          LDY  $42
2853:C4 45      503          CPY  $45
2855:F0 24      504          BEQ  COM2DN
2857:4C 9C 27   505          JMP  COM2LP
285A:C9 28      506 CHKLPA   CMP  #40        ;'(' (END OF SENT TEXT)?
285C:F0 1D      507          BEQ  COM2DN
285E:C9 2F      508          CMP  #47        ;'/' (ALSO END OF TEXT)?
2860:D0 ED      509          BNE  NXTOL1
2862:C9 26      510          CMP  #38        ;'&' - TREAT AS TEXT
2864:F0 0C      511          BEQ  SNTTX2+10
2866:D0 13      512          BNE  COM2DN
2868:AD F5 14   513 SNTTX2   LDA  RMVON
286B:C9 80      514          CMP  #TRUE
286D:F0 E0      515          BEQ  NXTOL1
286F:AD EA 13   516          LDA  CHAR
2872:A4 43      517          LDY  $43
2874:91 50      518          STA  ($50),Y
2876:E6 43      519          INC  $43
2878:4C 4F 28   520          JMP  NXTOL1
287B:A4 41      521 COM2DN   LDY  $41
287D:C4 44      522          CPY  $44
287F:F0 16      523          BEQ  COM3DN
```

```
2881:B1 52       524            LDA  ($52),Y
2883:C9 28       525            CMP  #40
2885:F0 10       526            BEQ  COM3DN
2887:C9 2F       527            CMP  #47
2889:F0 0C       528            BEQ  COM3DN
288B:C8          529            INY
288C:84 41       530            STY  $41
288E:A4 43       531            LDY  $43
2890:91 50       532            STA  ($50),Y
2892:E6 43       533            INC  $43
2894:4C 7B 28    534            JMP  COM2DN
2897:A5 51       535 COM3DN     LDA  $51
2899:85 53       536            STA  $53
289B:A5 50       537            LDA  $50
289D:85 52       538            STA  $52
289F:18          539            CLC
28A0:65 43       540            ADC  $43
28A2:85 50       541            STA  $50
28A4:90 02       542            BCC  *+4
28A6:E6 51       543            INC  $51
28A8:A5 43       544            LDA  $43
28AA:85 44       545            STA  $44
28AC:A4 5A       546            LDY  $5A
28AE:C4 59       547            CPY  $59
28B0:10 12       548            BPL  CMBIDN
28B2:A5 46       549            LDA  $46
28B4:18          550            CLC
28B5:69 0C       551            ADC  #3*MAXCUE
28B7:85 46       552            STA  $46
28B9:A5 49       553            LDA  $49
28BB:69 0C       554            ADC  #3*MAXADL
28BD:85 49       555            STA  $49
28BF:A0 00       556            LDY  #0
28C1:4C 43 27    557            JMP  CMBILP
28C4:A9 20       558 CMBIDN     LDA  #32
28C6:8D F0 13    559            STA  LASCHR
28C9:A9 00       560            LDA  #0
28CB:85 40       561            STA  $40
28CD:85 41       562            STA  $41
28CF:A4 40       563 COM4LP     LDY  $40
28D1:C4 43       564            CPY  $43
28D3:10 2A       565            BPL  COM4DN
28D5:E6 40       566            INC  $40
28D7:B1 52       567            LDA  ($52),Y
28D9:8D EA 13    568            STA  CHAR
28DC:AA          569            TAX
28DD:BD 28 15    570            LDA  CHRCLS,X
28E0:AA          571            TAX
28E1:BD A8 15    572            LDA  CLSTYP,X
28E4:C9 01       573            CMP  #TXTTYP
28E6:D0 E7       574            BNE  COM4LP
28E8:AD EA 13    575            LDA  CHAR
28EB:C9 20       576            CMP  #32
28ED:D0 05       577            BNE  *+7
28EF:CD F0 13    578            CMP  LASCHR
28F2:F0 DB       579            BEQ  COM4LP
28F4:A4 41       580            LDY  $41
28F6:E6 41       581            INC  $41
```

```
28F8:91 50      582            STA  ($50),Y
28FA:8D F0 13   583            STA  LASCHR
28FD:D0 D0      584            BNE  COM4LP
28FF:A4 41      585 COM4DN     LDY  $41
2901:88         586            DEY
2902:B1 50      587            LDA  ($50),Y
2904:C9 2E      588            CMP  #46        ;'.' ON END?
2906:F0 0B      589            BEQ  GOTPD2
2908:C9 20      590            CMP  #32
290A:F0 03      591            BEQ  *+5
290C:C8         592            INY
290D:E6 41      593            INC  $41
290F:A9 2E      594            LDA  #46
2911:91 50      595            STA  ($50),Y
2913:A0 00      596 GOTPD2     LDY  #0
2915:B1 50      597            LDA  ($50),Y
2917:AA         598            TAX
2918:BD 28 15   599            LDA  CHRCLS,X
291B:C9 02      600            CMP  #2
291D:D0 06      601            BNE  *+8
291F:18         602            CLC
2920:8A         603            TXA
2921:69 20      604            ADC  #32
2923:91 50      605            STA  ($50),Y
2925:A4 41      606            LDY  $41
2927:A9 2B      607            LDA  #43
2929:91 50      608            STA  ($50),Y    ;PUT '+' (=CR) ON END)
292B:C8         609            INY
292C:8C C3 12   610            STY  MODEL+2
292F:AD F6 14   611            LDA  WRKSPC
2932:8D C1 12   612            STA  MODEL
2935:85 52      613            STA  $52
2937:18         614            CLC
2938:6D C3 12   615            ADC  MODEL+2
293B:8D CB 15   616            STA  NXTTXT
293E:AD F7 14   617            LDA  WRKSPC+1
2941:8D C2 12   618            STA  MODEL+1
2944:85 53      619            STA  $53
2946:69 00      620            ADC  #0
2948:8D CC 15   621            STA  NXTTXT+1
294B:B1 50      622 COM5LP     LDA  ($50),Y
294D:91 52      623            STA  ($52),Y
294F:88         624            DEY
2950:D0 F9      625            BNE  COM5LP
2952:A9 00      626            LDA  #0
2954:85 20      627            STA  LW
2956:85 24      628            STA  HC
2958:A0 08      629            LDY  #>PROMPT
295A:A2 0B      630            LDX  #<PROMPT
295C:20 FB 1C   631            JSR  DISPWT
295F:A9 80      632            LDA  #TRUE
2961:8D E7 13   633            STA  NEWRSP
2964:A9 00      634            LDA  #NOERR
2966:8D D4 15   635            STA  TYPERR
2969:20 5F 20   636 EDIT       JSR  WPEDIT
296C:20 A9 29   637            JSR  SCORE
296F:D0 0B      638            BNE  *+13
2971:20 DD FB   639            JSR  BELOUT
```

```
2974:A9 00     640         LDA  #FALSE
2976:8D E7 13  641         STA  NEWRSP
2979:4C 69 29  642         JMP  EDIT
297C:60        643         RTS
297D:          644 ;
297D:          645 ; IF CUE NULL, SET TO "JUST JOIN"
297D:          646 ;
297D:AD 84 10  647 ENDCUE  LDA  CUELEN
2980:F0 07     648         BEQ  QJOIN
2982:8A        649         TXA
2983:48        650         PHA
2984:AD 84 10  651         LDA  CUELEN
2987:D0 13     652         BNE  JOINDN
2989:8A        653 QJOIN   TXA
298A:48        654         PHA
298B:A2 00     655         LDX  #0
298D:BD 9B 13  656 JOINLP  LDA  JUSJOI,X
2990:91 52     657         STA  ($52),Y
2992:C8        658         INY
2993:E6 58     659         INC  $58
2995:E8        660         INX
2996:E0 09     661         CPX  #9
2998:30 F3     662         BMI  JOINLP
299A:A9 FF     663         LDA  #$FF      ;NULL CUE SIGNAL
299C:A6 5B     664 JOINDN  LDX  $5B
299E:9D D8 12  665         STA  CUETXT+2,X
29A1:E8        666         INX
29A2:E8        667         INX
29A3:E8        668         INX
29A4:86 5B     669         STX  $5B
29A6:68        670         PLA
29A7:AA        671         TAX
29A8:60        672         RTS
29A9:          673 ;
29A9:          674         CHN  MAIN9.ASM
29A9:            1         LST  ON
```

```
29A9:              3 ; RESPONSE SCORING SUBROUTINE
29A9:              4 ;
29A9:AD CB 15      5 SCORE    LDA  NXTTXT      ;READ KID'S RESPONSE FROM SCREEN
29AC:8D C4 12      6          STA  RESPNS
29AF:85 52         7          STA  $52
29B1:AD CC 15      8          LDA  NXTTXT+1
29B4:8D C5 12      9          STA  RESPNS+1
29B7:85 53        10          STA  $53
29B9:AD E8 13     11          LDA  EDITY
29BC:85 25        12          STA  VC
29BE:A9 20        13          LDA  #32
29C0:8D F0 13     14          STA  LASCHR
29C3:A9 00        15          LDA  #0
29C5:85 54        16          STA  $54
29C7:A5 25        17 RSP1LP   LDA  VC
29C9:CD 83 10     18          CMP  EDTBTM
29CC:F0 02        19          BEQ  *+4
29CE:10 35        20          BPL  RSP1DN
29D0:0A           21          ASL  A
29D1:AA           22          TAX
29D2:BD F8 14     23          LDA  IMGLOC,X
29D5:85 50        24          STA  $50
29D7:BD F9 14     25          LDA  IMGLOC+1,X
29DA:85 51        26          STA  $51
29DC:A4 20        27          LDY  LW
29DE:84 24        28          STY  HC
29E0:A4 24        29 RSP2LP   LDY  HC
29E2:C4 21        30          CPY  RW
29E4:F0 02        31          BEQ  *+4
29E6:10 19        32          BPL  RSP2DN
29E8:B1 50        33          LDA  ($50),Y
29EA:E6 24        34          INC  HC
29EC:C9 20        35          CMP  #32
29EE:D0 05        36          BNE  *+7
29F0:CD F0 13     37          CMP  LASCHR
29F3:F0 EB        38          BEQ  RSP2LP
29F5:A4 54        39          LDY  $54
29F7:91 52        40          STA  ($52),Y
29F9:E6 54        41          INC  $54
29FB:8D F0 13     42          STA  LASCHR
29FE:4C E0 29     43          JMP  RSP2LP
2A01:E6 25        44 RSP2DN   INC  VC
2A03:D0 C2        45          BNE  RSP1LP
2A05:A5 54        46 RSP1DN   LDA  $54
2A07:D0 01        47          BNE  *+3
2A09:60           48          RTS
2A0A:A8           49          TAY
2A0B:88           50          DEY
2A0C:B1 52        51          LDA  ($52),Y
2A0E:C9 20        52          CMP  #32
2A10:D0 06        53          BNE  *+8
2A12:C6 54        54          DEC  $54
2A14:98           55          TYA
2A15:8D C6 12     56          STA  RESPNS+2
2A18:C9 03        57          CMP  #3
2A1A:D0 1E        58          BNE  NOTBYE
2A1C:A0 00        59          LDY  #0
2A1E:B1 52        60 BYELP    LDA  ($52),Y
```

```
MAIN9.ASM     SENTENCE COMBINING DEMONSTRATION    09-MAR-82 #000101 PAGE 71

2A20:C9 61        61            CMP  #65+32
2A22:30 07        62            BMI  *+9
2A24:C9 7B        63            CMP  #65+26+32
2A26:10 03        64            BPL  *+5
2A28:38           65            SEC
2A29:E9 20        66            SBC  #32
2A2B:D9 A4 13     67            CMP  BYE,Y
2A2E:D0 0A        68            BNE  NOTBYE
2A30:C8           69            INY
2A31:C9 03        70            CMP  #3
2A33:30 E9        71            BMI  BYELP
2A35:A9 05        72            LDA  #TYPDBY
2A37:4C A3 2F     73            JMP  TRMRTN
2A3A:AD C1 12     74 NOTBYE     LDA  MODEL
2A3D:85 50        75            STA  $50
2A3F:AD C2 12     76            LDA  MODEL+1
2A42:85 51        77            STA  $51
2A44:AD C3 12     78            LDA  MODEL+2
2A47:38           79            SEC
2A48:E9 01        80            SBC  #1
2A4A:CD C6 12     81            CMP  RESPNS+2
2A4D:D0 15        82            BNE  NOTSAM
2A4F:A8           83            TAY
2A50:88           84            DEY
2A51:B1 50        85 CMP1LP     LDA  ($50),Y
2A53:D1 52        86            CMP  ($52),Y
2A55:D0 0D        87            BNE  NOTSAM
2A57:88           88            DEY
2A58:D0 F7        89            BNE  CMP1LP
2A5A:B1 50        90            LDA  ($50),Y
2A5C:D1 52        91            CMP  ($52),Y
2A5E:D0 04        92            BNE  NOTSAM
2A60:38           93 RITANS     SEC
2A61:A9 FF        94            LDA  #$FF
2A63:60           95            RTS                 ;SET CARRY TO SHOW CORRECT; RETURN
2A64:A0 00        96 NOTSAM     LDY  #0
2A66:B1 52        97            LDA  ($52),Y
2A68:C9 61        98            CMP  #65+32
2A6A:30 22        99            BMI  CAPOK
2A6C:C9 7B       100            CMP  #65+26+32
2A6E:10 1E       101            BPL  CAPOK
2A70:20 D0 18    102            JSR  SETWIN
2A73:20 8C 1F    103            JSR  CLRWIN
2A76:A2 0E       104            LDX  #<MSG15
2A78:A0 5F       105            LDY  #>MSG15
2A7A:A9 00       106            LDA  #0
2A7C:20 FB 1C    107            JSR  DISPWT
2A7F:A2 0E       108            LDX  #<MSG14
2A81:A0 24       109            LDY  #>MSG14
2A83:A9 00       110            LDA  #0
2A85:20 FB 1C    111            JSR  DISPWT
2A88:20 E7 2E    112            JSR  CORRSP
2A8B:4C A9 29    113            JMP  SCORE
2A8E:AC C6 12    114 CAPOK      LDY  RESPNS+2
2A91:88          115            DEY
2A92:B1 52       116            LDA  ($52),Y
2A94:C9 2E       117            CMP  #46
2A96:F0 1E       118            BEQ  PEROK
```

```
2A98:20 D0 18          JSR  SETWIN
2A9B:20 8C 1F          JSR  CLRWIN
2A9E:A2 0E             LDX  #<MSG16
2AA0:A0 6F             LDY  #>MSG16
2AA2:A9 00             LDA  #0
2AA4:20 FB 1C          JSR  DISPWT
2AA7:A2 0E             LDX  #<MSG14
2AA9:A0 24             LDY  #>MSG14
2AAB:A9 00             LDA  #0
2AAD:20 FB 1C          JSR  DISPWT
2AB0:20 E7 2E          JSR  CORRSP
2AB3:4C A9 29          JMP  SCORE
2AB6:AD FD 14  PEROK   LDA  NITEMS     ;SEE IF ALL CUES PRESENT
2AB9:85 57             STA  $57        ;LOOP 1 TERM VAR
2ABB:A9 00             LDA  #0
2ABD:85 54             STA  $54        ;LOOP 1 INDEX
2ABF:85 55             STA  $55        ;CUETXT ARRAY SENT INDEX
2AC1:A5 54     QLK1LP  LDA  $54        ;LOOP THRU SENT'S IN ITEM
2AC3:C5 57             CMP  $57
2AC5:D0 03             BNE  *+5
2AC7:4C 8B 2B          JMP  CUESOK
2ACA:E6 54             INC  $54
2ACC:A5 55             LDA  $55
2ACE:85 56             STA  $56
2AD0:18                CLC
2AD1:69 0C             ADC  #3*MAXCUE
2AD3:85 55             STA  $55
2AD5:A9 00             LDA  #0
2AD7:85 58             STA  $58        ;MAX CUES IN SENT CTR; LOOP 2 TERM VAR
2AD9:A5 58     QLK2LP  LDA  $58        ;LOOP THRU CUES IN SENT
2ADB:C9 04             CMP  #MAXCUE
2ADD:F0 E2             BEQ  QLK1LP     ;EQ=FOUND CUES FOR THIS SENT, GET NEXT
2ADF:E6 58             INC  $58
2AE1:A4 56             LDY  $56
2AE3:E6 56             INC  $56
2AE5:E6 56             INC  $56
2AE7:E6 56             INC  $56
2AE9:B9 D8 12          LDA  CUETXT+2,Y
2AEC:F0 D3             BEQ  QLK1LP     ;EQ=CUE NULL, DONE WITH SENT
2AEE:C9 FF             CMP  #$FF
2AF0:F0 E7             BEQ  QLK2LP     ;IS CUE 'JUST JOIN' - SKIP IF SO
2AF2:85 43             STA  $43
2AF4:B9 D6 12          LDA  CUETXT,Y
2AF7:85 40             STA  $40
2AF9:B9 D7 12          LDA  CUETXT+1,Y
2AFC:85 41             STA  $41
2AFE:A9 00             LDA  #0
2B00:85 45             STA  $45        ;RESP CHAR (LOOP 3) INDEX
2B02:AD C6 12          LDA  RESPNS+2
2B05:38                SEC
2B06:E5 43             SBC  $43
2B08:85 46             STA  $46        ;LEN RESP UP TO LAST LOC CUE COULD START
2B0A:A4 45     QLK3LP  LDY  $45        ;LOOP TO FIND 1ST CHAR OF CUE
2B0C:C4 46             CPY  $46
2B0E:F0 25             BEQ  CUEMIS     ;EQ=RAN PAST END RESP - CUE NOT THERE
2B10:E6 45             INC  $45
2B12:B1 52             LDA  ($52),Y
2B14:A0 00             LDY  #0
```

```
2B16:D1 40      177          CMP  ($40),Y
2B18:D0 F0      178          BNE  QLK3LP     ;EQ=FOUND POSSIBLE 1ST CHAR
2B1A:C8         179          INY
2B1B:84 44      180          STY  $44        ;CUE TEXT CHAR INDEX
2B1D:A5 45      181          LDA  $45
2B1F:85 42      182          STA  $42        ;RESP CHAR INDEX
2B21:A4 44      183 QLK4LP   LDY  $44        ;LOOP TO COMP REST OF CHAR'S
2B23:C4 43      184          CPY  $43
2B25:F0 B2      185          BEQ  QLK2LP     ;EQ=GOT THIS CUE, LOOK FOR NEXT
2B27:B1 40      186          LDA  ($40),Y
2B29:E6 44      187          INC  $44
2B2B:A4 42      188          LDY  $42
2B2D:E6 42      189          INC  $42
2B2F:D1 52      190          CMP  ($52),Y
2B31:D0 D7      191          BNE  QLK3LP     ;NE=THIS IS NOT CUE-TRY NEXT SUBSTRING
2B33:F0 EC      192          BEQ  QLK4LP     ;EQ=THESE CHAR'S SAME, GET NEXT
2B35:A5 56      193 CUEMIS   LDA  $56
2B37:48         194          PHA
2B38:20 D0 18   195          JSR  SETWIN
2B3B:20 8C 1F   196          JSR  CLRWIN
2B3E:A2 0E      197          LDX  #<MSG17
2B40:A0 A2      198          LDY  #>MSG17
2B42:A9 00      199          LDA  #0
2B44:20 FB 1C   200          JSR  DISPWT
2B47:68         201          PLA
2B48:48         202          PHA
2B49:20 FC 2E   203          JSR  DSPCUE
2B4C:A9 BF      204          LDA  #>MSG18
2B4E:85 48      205          STA  $48
2B50:A9 0E      206          LDA  #<MSG18
2B52:85 49      207          STA  $49
2B54:AD BF 0E   208          LDA  MSG18
2B57:85 58      209          STA  $58
2B59:20 1F 1D   210          JSR  DISPLA
2B5C:A2 0E      211          LDX  #<MSG19
2B5E:A0 C9      212          LDY  #>MSG19
2B60:A9 00      213          LDA  #0
2B62:20 FB 1C   214          JSR  DISPWT
2B65:68         215          PLA
2B66:20 FC 2E   216          JSR  DSPCUE
2B69:A9 D7      217          LDA  #>MSG20
2B6B:85 48      218          STA  $48
2B6D:A9 0E      219          LDA  #<MSG20
2B6F:85 49      220          STA  $49
2B71:AD D7 0E   221          LDA  MSG20
2B74:85 58      222          STA  $58
2B76:20 1F 1D   223          JSR  DISPLA
2B79:A2 0E      224          LDX  #<MSG14
2B7B:A0 24      225          LDY  #>MSG14
2B7D:A9 00      226          LDA  #0
2B7F:20 FB 1C   227          JSR  DISPWT
2B82:20 E7 2E   228          JSR  CORRSP
2B85:4C A9 29   229          JMP  SCORE
2B88:AC C6 12   230 CUESOK   LDY  RESPNS+2   ;COUNT # 'WORDS' IN RESP
2B8B:A9 20      231          LDA  #32
2B8D:91 52      232          STA  ($52),Y
2B8F:C8         233          INY
2B90:84 43      234          STY  $43
```

```
2B92:A0 00      235          LDY   #0
2B94:8C E7 14   236          STY   COUNT
2B97:B1 52      237 CNT1LP   LDA   ($52),Y
2B99:C9 20      238          CMP   #32
2B9B:D0 03      239          BNE   *+5
2B9D:EE E7 14   240          INC   COUNT
2BA0:C8         241          INY
2BA1:C4 43      242          CPY   #43
2BA3:D0 F2      243          BNE   CNT1LP
2BA5:A0 00      244          LDY   #0
2BA7:8C E9 14   245          STY   COUNT2
2BAA:B1 50      246 CNT2LP   LDA   ($50),Y
2BAC:C9 20      247          CMP   #32
2BAE:D0 06      248          BNE   *+8
2BB0:EE E9 14   249          INC   COUNT2
2BB3:4C C0 2B   250          JMP   CNT2NX
2BB6:C9 2B      251          CMP   #$2B      ;'+'?
2BB8:D0 06      252          BNE   CNT2NX
2BBA:EE E9 14   253          INC   COUNT2
2BBD:4C C6 2B   254          JMP   CNT2DN
2BC0:C8         255 CNT2NX   INY
2BC1:CC C3 12   256          CPY   MODEL+2
2BC4:D0 E4      257          BNE   CNT2LP
2BC6:AD E7 14   258 CNT2DN   LDA   COUNT
2BC9:CD E9 14   259          CMP   COUNT2
2BCC:F0 4B      260          BEQ   WDCTOK
2BCE:90 1B      261          BCC   RSPLES    ;CS=RESP HAS LESS WDS THAN MODEL
2BD0:20 D0 18   262          JSR   SETWIN
2BD3:20 8C 1F   263          JSR   CLRWIN
2BD6:A2 0E      264          LDX   #<MSG21
2BD8:A0 F1      265          LDY   #>MSG21
2BDA:A9 00      266          LDA   #0
2BDC:20 FB 1C   267          JSR   DISPWT
2BDF:A2 0F      268          LDX   #<MSG24
2BE1:A0 5E      269          LDY   #>MSG24
2BE3:A9 00      270          LDA   #0
2BE5:20 FB 1C   271          JSR   DISPWT
2BE8:4C 03 2C   272          JMP   CORCNT
2BEB:20 D0 18   273 RSPLES   JSR   SETWIN
2BEE:20 8C 1F   274          JSR   CLRWIN
2BF1:A2 0E      275          LDX   #<MSG21
2BF3:A0 F1      276          LDY   #>MSG21
2BF5:A9 00      277          LDA   #0
2BF7:20 FB 1C   278          JSR   DISPWT
2BFA:A2 0F      279          LDX   #<MSG22
2BFC:A0 19      280          LDY   #>MSG22
2BFE:A9 00      281          LDA   #0
2C00:20 FB 1C   282          JSR   DISPWT
2C03:A2 0F      283 CORCNT   LDX   #<MSG23
2C05:A0 42      284          LDY   #>MSG23
2C07:A9 00      285          LDA   #0
2C09:20 FB 1C   286          JSR   DISPWT
2C0C:A2 0E      287          LDX   #<MSG14
2C0E:A0 24      288          LDY   #>MSG14
2C10:20 FB 1C   289          JSR   DISPWT
2C13:20 E7 2E   290          JSR   CORRSP
2C16:4C A9 29   291          JMP   SCORE
2C19:A0 00      292 WDCTOK   LDY   #0
```

```
2C1B:84 46       293          STY  $46        ;MODEL INDEX
2C1D:84 47       294          STY  $47        ;RESP INDEX
2C1F:8C D5 15    295          STY  WRDCNT
2C22:A9 00       296 SPL1LP   LDA  #0         ;LOCATE NEXT WORDS
2C24:8D 50 13    297          STA  MODLWD+2   ;WORD LENGTHS
2C27:8D 53 13    298          STA  RESPWD+2
2C2A:A5 50       299          LDA  $50        ;MODEL WORD LOC
2C2C:18          300          CLC
2C2D:65 46       301          ADC  $46
2C2F:8D 4E 13    302          STA  MODLWD
2C32:A5 51       303          LDA  $51
2C34:69 00       304          ADC  #0
2C36:8D 4F 13    305          STA  MODLWD+1
2C39:A4 46       306          LDY  $46
2C3B:B1 50       307 SPL2LP   LDA  ($50),Y
2C3D:C8          308          INY
2C3E:C9 20       309          CMP  #32        ;BLANK ENDS A WORD
2C40:F0 0A       310          BEQ  SPL2DN
2C42:C9 2B       311          CMP  #$2B       ;SO DOES '+'
2C44:F0 06       312          BEQ  SPL2DN
2C46:EE 50 13    313          INC  MODLWD+2   ;THIS CHAR PART OF WORD
2C49:4C 3B 2C    314          JMP  SPL2LP
2C4C:A5 52       315 SPL2DN   LDA  $52        ;GOT MODEL WORD. NOW GET RESP
2C4E:18          316          CLC
2C4F:65 47       317          ADC  $47
2C51:8D 51 13    318          STA  RESPWD
2C54:A5 53       319          LDA  $53
2C56:69 00       320          ADC  #0
2C58:8D 52 13    321          STA  RESPWD+1
2C5B:84 46       322          STY  $46
2C5D:A4 47       323          LDY  $47
2C5F:B1 52       324 SPL3LP   LDA  ($52),Y
2C61:C8          325          INY
2C62:C9 20       326          CMP  #32
2C64:F0 06       327          BEQ  SPL3DN
2C66:EE 53 13    328          INC  RESPWD+2
2C69:4C 5F 2C    329          JMP  SPL3LP
2C6C:AD 4E 13    330 SPL3DN   LDA  MODLWD
2C6F:85 54       331          STA  $54
2C71:AD 4F 13    332          LDA  MODLWD+1
2C74:85 55       333          STA  $55
2C76:AD 51 13    334          LDA  RESPWD
2C79:85 56       335          STA  $56
2C7B:AD 52 13    336          LDA  RESPWD+1
2C7E:85 57       337          STA  $57
2C80:AD 50 13    338          LDA  MODLWD+2  ;WORDS SAME LEN?
2C83:CD 53 13    339          CMP  RESPWD+2
2C86:D0 10       340          BNE  WDSDIF
2C88:84 47       341          STY  $47
2C8A:A8          342          TAY                ;LEN EQ-SEE IF MATCH
2C8B:88          343          DEY
2C8C:B1 54       344 SPL4LP   LDA  ($54),Y
2C8E:D1 56       345          CMP  ($56),Y
2C90:D0 06       346          BNE  WDSDIF
2C92:88          347          DEY
2C93:10 F7       348          BPL  SPL4LP
2C95:4C DB 2E    349          JMP  SPLINX    ;SAME-GET NEXT PAIR
2C98:AD 53 13    350 WDSDIF   LDA  RESPWD+2  ;EITHER WORD < 3 CH'S LONG?
```

```
2C9B:C9 03      351            CMP  #3
2C9D:30 07      352            BMI  LT3        ;IF SO, SEE IF 'A', 'AN'
2C9F:AD 50 13   353            LDA  MODLWD+2
2CA2:C9 03      354            CMP  #3
2CA4:10 03      355            BPL  *+5
2CA6:4C 58 2D   356 LT3        JMP  TRYAAN
2CA9:38         357            SEC
2CAA:ED 53 13   358            SBC  RESPWD+2
2CAD:8D D2 15   359            STA  LENDIF     ;GET DIFF IN LEN
2CB0:10 05      360            BPL  *+7        ;CHANGE TO ABS VAL
2CB2:49 FF      361            EOR  #$FF
2CB4:18         362            CLC
2CB5:69 01      363            ADC  #1
2CB7:C9 02      364            CMP  #2         ;DIFF MUST BE < 2 CH'S
2CB9:30 03      365            BMI  *+5
2CBB:4C 8E 2D   366            JMP  NONSPL     ;> 1, ERGO NOT SPELLING ERR
2CBE:A0 00      367            LDY  #0         ;COUNT # CH'S DIFF
2CC0:8C D6 15   368            STY  CHRDIF
2CC3:84 42      369            STY  $42        ;RESP WORD INDEX
2CC5:84 43      370            STY  $43        ;MODEL WORD INDEX
2CC7:AD 53 13   371            LDA  RESPWD+2   ;RESP LONGER,EQ SHORTER?
2CCA:CD 50 13   372            CMP  MODLWD+2
2CCD:30 2D      373            BMI  SPL6LP
2CCF:F0 56      374            BEQ  SPL7LP
2CD1:B1 56      375 SPL5LP     LDA  ($56),Y    ;RESP LONGER-1 CH ADDED?
2CD3:85 44      376            STA  $44
2CD5:E6 42      377            INC  $42
2CD7:A4 43      378            LDY  $43
2CD9:E6 43      379            INC  $43
2CDB:B1 54      380            LDA  ($54),Y
2CDD:C5 44      381            CMP  $44        ;CHAR'S EQ?
2CDF:F0 0F      382            BEQ  SPL5NX
2CE1:EE D6 15   383            INC  CHRDIF     ;NO-COUNT THIS MISMATCH
2CE4:AD D6 15   384            LDA  CHRDIF
2CE7:C9 02      385            CMP  #2         ;TOO MANY ALREADY?
2CE9:30 03      386            BMI  *+5
2CEB:4C 8E 2D   387            JMP  NONSPL     ;YES-NOT A SPELLING ERROR
2CEE:E6 42      388            INC  $42
2CF0:A4 42      389 SPL5NX     LDY  $42        ;GET NEXT CH', IF ANY
2CF2:CC 53 13   390            CPY  RESPWD+2
2CF5:30 DA      391            BMI  SPL5LP
2CF7:F0 D8      392            BEQ  SPL5LP
2CF9:4C B1 2D   393            JMP  SPLERR
2CFC:B1 54      394 SPL6LP     LDA  ($54),Y    ;MODEL LONGER-1 CH OMITTED?
2CFE:85 44      395            STA  $44
2D00:E6 43      396            INC  $43
2D02:A4 42      397            LDY  $42
2D04:E6 42      398            INC  $42
2D06:B1 56      399            LDA  ($56),Y
2D08:C5 44      400            CMP  $44        ;CHAR'S EQ?
2D0A:F0 0F      401            BEQ  SPL6NX
2D0C:EE D6 15   402            INC  CHRDIF     ;NO-COUNT THIS MISMATCH
2D0F:AD D6 15   403            LDA  CHRDIF
2D12:C9 02      404            CMP  #2         ;TOO MANY ALREADY?
2D14:30 03      405            BMI  *+5
2D16:4C 8E 2D   406            JMP  NONSPL     ;YES-NOT A SPELLING ERROR
2D19:E6 43      407            INC  $43
2D1B:A4 43      408 SPL6NX     LDY  $43        ;GET NEXT CH', IF ANY
```

```
2D1D:CC 50 13  409            CPY  MODLWD+2
2D20:30 DA     410            BMI  SPL6LP
2D22:F0 D8     411            BEQ  SPL6LP
2D24:4C B1 2D  412            JMP  SPLERR
2D27:B1 54     413 SPL7LP     LDA  ($54);Y
2D29:D1 56     414            CMP  ($56),Y
2D2B:F0 06     415            BEQ  *+8
2D2D:8C D9 15  416            STY  DIFLOC
2D30:EE B6 15  417            INC  CHRDIF
2D33:C8        418            INY
2D34:CC 53 13  419            CPY  RESPWD+2
2D37:D0 EE     420            BNE  SPL7LP
2D39:AD B6 15  421            LDA  CHRDIF     ;HOW MANY CH'S DIFFERED?
2D3C:C9 01     422            CMP  #1
2D3E:F0 71     423            BEQ  SPLERR
2D40:C9 02     424            CMP  #2
2D42:D0 4A     425            BNE  NONSPL
2D44:AC D9 15  426            LDY  DIFLOC     ;2 DIFF-TRANSPOSED?
2D47:B1 54     427            LDA  ($54),Y
2D49:88        428            DEY
2D4A:B1 56     429            CMP  ($56),Y
2D4C:D0 40     430            BNE  NONSPL
2D4E:B1 54     431            LDA  ($54),Y
2D50:C8        432            INY
2D51:D1 56     433            CMP  ($56),Y
2D53:D0 39     434            BNE  NONSPL     ;EQ=TRANSPOSED
2D55:4C B1 2D  435            JMP  SPLERR
2D58:A0 00     436 TRYAAN     LDY  #0
2D5A:B1 54     437            LDA  ($54),Y
2D5C:C9 61     438            CMP  #65+32     ;FIRST CHAR MODEL LC 'A'?
2D5E:F0 08     439            BEQ  MDLLCA
2D60:A6 46     440            LDX  $46        ;1ST WD IN SENT
2D62:D0 2A     441            BNE  NONSPL
2D64:C9 41     442            CMP  #65        ;YES-UC 'A'?
2D66:D0 26     443            BNE  NONSPL
2D68:C8        444 MDLLCA     INY
2D69:CC 50 13  445            CPY  MODLWD+2
2D6C:30 06     446            BMI  MAYBE
2D6E:B1 54     447            LDA  ($54);Y
2D70:C9 4E     448            CMP  #65+13     ;IF 2 LTRS, LC 'N'?
2D72:D0 1A     449            BNE  NONSPL
2D74:A0 00     450 MAYBE      LDY  #0         ;MODEL IS 'A' OR 'AN'-IS RESP?
2D76:B1 56     451            LDA  ($56);Y
2D78:C9 61     452            CMP  #65+32
2D7A:F0 08     453            BEQ  RSPLCA
2D7C:A4 47     454            LDY  $47
2D7E:D0 0E     455            BNE  NONSPL
2D80:C9 41     456            CMP  #65
2D82:D0 0A     457            BNE  NONSPL
2D84:C8        458 RSPLCA     INY
2D85:B1 56     459            LDA  ($56);Y
2D87:C9 4E     460            CMP  #65+13
2D89:D0 03     461            BNE  NONSPL
2D8B:4C DD 2E  462            JMP  SPLINX
2D8E:AD D4 15  463 NONSPL     LDA  TYPERR     ;WORD HAS NON-SPELLING ERROR
2D91:C9 01     464            CMP  #NONERR    ;LAST ERR NON-SPELLING ONE TOO?
2D93:D0 08     465            BNE  NOT2ND
2D95:AD D5 15  466            LDA  WRDCNT     ;YES-IN SAME WORD?
```

```
2D98:CD DA 15  467             CMP  WRDNUM
2D9B:D0 03     468             BNE  *+5
2D9D:4C E3 2E  469             JMP  ERRRET
2DA0:A9 01     470 NOT2ND      LDA  #NONERR
2DA2:8D D4 15  471             STA  TYPERR
2DA5:AD D5 15  472             LDA  WRDCNT
2DA8:8D DA 15  473             STA  WRDNUM
2DAB:20 15 2F  474             JSR  DSPWRD
2DAE:4C A9 29  475             JMP  SCORE
2DB1:AD D4 15  476 SPLERR      LDA  TYPERR    ;WORD HAS A SPELLING ERROR
2DB4:C9 02     477             CMP  #ERRSPL
2DB6:D0 08     478             BNE  NOTRPT    ;SAME WORD, ERR AS LAST?
2DB8:AD DA 15  479             LDA  WRDNUM
2DBB:CD D5 15  480             CMP  WRDCNT
2DBE:F0 11     481             BEQ  SAMERR
2DC0:A9 02     482 NOTRPT      LDA  #ERRSPL   ;1ST ERR, OR DIFF ERR THAN LAST
2DC2:8D D4 15  483             STA  TYPERR
2DC5:AD D5 15  484             LDA  WRDCNT
2DC8:8D DA 15  485             STA  WRDNUM
2DCB:20 15 2F  486             JSR  DSPWRD
2DCE:4C A9 29  487             JMP  SCORE
2DD1:20 D0 18  488 SAMERR      JSR  SETWIN
2DD4:20 BC 1F  489             JSR  CLRWIN
2DD7:A2 10     490             LDX  #<MSG29
2DD9:A0 07     491             LDY  #>MSG29
2DDB:A9 00     492             LDA  #0
2DDD:20 FB 1C  493             JSR  DISPWT
2DE0:AD 4E 13  494             LDA  MODLWD
2DE3:38        495             SEC
2DE4:E9 01     496             SBC  #1
2DE6:85 48     497             STA  $48
2DE8:AD 4F 13  498             LDA  MODLWD+1
2DEB:E9 00     499             SBC  #0
2DED:85 49     500             STA  $49
2DEF:AD 50 13  501             LDA  MODLWD+2
2DF2:85 58     502             STA  $58
2DF4:20 1F 1D  503             JSR  DISPLA
2DF7:A9 25     504             LDA  #>MSG30
2DF9:85 48     505             STA  $48
2DFB:A9 10     506             LDA  #<MSG30
2DFD:85 49     507             STA  $49
2DFF:AD 25 10  508             LDA  MSG30
2E02:85 58     509             STA  $58
2E04:20 1F 1D  510             JSR  DISPLA
2E07:20 1E 1B  511             JSR  WAIT15
2E0A:90 09     512             BCC  TYPDCR
2E0C:20 D0 18  513             JSR  SETWIN
2E0F:20 8C 1F  514             JSR  CLRWIN
2E12:20 EF 18  515             JSR  WARNCR
2E15:20 D0 18  516 TYPDCR      JSR  SETWIN
2E18:20 8C 1F  517             JSR  CLRWIN
2E1B:AD E8 13  518             LDA  EDITY
2E1E:85 22     519             STA  TW
2E20:85 25     520             STA  VC
2E22:AD 83 10  521             LDA  EDTBTM
2E25:85 23     522             STA  BW
2E27:A9 00     523             LDA  #0
2E29:85 20     524             STA  LW
```

```
2E2B:85 24      525         STA  HC
2E2D:8D EC 13   526         STA  STSAVE
2E30:A9 27      527         LDA  #39
2E32:85 21      528         STA  RW
2E34:20 8E 22   529         JSR  SAVCLR
2E37:A0 00      530         LDY  #0
2E39:84 40      531         STY  $40       ;INDEX INTO SCRBUF
2E3B:8C D8 15   532         STY  SCRCNT
2E3E:8C DB 15   533         STY  LASEND
2E41:A9 20      534         LDA  #32
2E43:8D F0 13   535         STA  LASCHR
2E46:A4 40      536 SPL8LP  LDY  $40
2E48:CC F1 13   537         CPY  BUFLEN
2E4B:F0 39      538         BEQ  SPL8DN
2E4D:B9 F2 13   539         LDA  SCRBUF,Y
2E50:C9 20      540         CMP  #32
2E52:D0 1F      541         BNE  PARTWD
2E54:CD F0 13   542         CMP  LASCHR
2E57:8D F0 13   543         STA  LASCHR
2E5A:F0 25      544         BEQ  SPL8NX
2E5C:AD D7 15   545         LDA  ENDSTR    ;HAVE HIT END OF WORD
2E5F:8D DB 15   546         STA  LASEND
2E62:8C D7 15   547         STY  ENDSTR
2E65:AD D8 15   548         LDA  SCRCNT
2E68:CD D5 15   549         CMP  WRDCNT
2E6B:F0 19      550         BEQ  SPL8DN
2E6D:EE D8 15   551         INC  SCRCNT
2E70:4C 81 2E   552         JMP  SPL8NX
2E73:AA         553 PARTWD  TAX
2E74:AD F0 13   554         LDA  LASCHR
2E77:8E F0 13   555         STX  LASCHR
2E7A:C9 20      556         CMP  #32
2E7C:D0 03      557         BNE  SPL8NX
2E7E:8C DC 15   558         STY  STRTWD    ;HAVE HIT START OF WORD
2E81:E6 40      559 SPL8NX  INC  $40
2E83:4C 46 2E   560         JMP  SPL8LP
2E86:AD 50 13   561 SPL8DN  LDA  MODLWD+2
2E89:CD 53 13   562         CMP  RESPWD+2
2E8C:F0 13      563         BEQ  PUTRSP
2E8E:30 11      564         BMI  PUTRSP
2E90:A0 F1      565         LDY  #241
2E92:A2 F0      566         LDX  #240
2E94:BD F2 13   567 SPL9LP  LDA  SCRBUF,X
2E97:99 F2 13   568         STA  SCRBUF,Y
2E9A:88         569         DEY
2E9B:CA         570         DEX
2E9C:EC D7 15   571         CPX  ENDSTR
2E9F:D0 F3      572         BNE  SPL9LP
2EA1:AD 4E 13   573 PUTRSP  LDA  MODLWD
2EA4:85 50      574         STA  $50
2EA6:AD 4F 13   575         LDA  MODLWD+1
2EA9:85 51      576         STA  $51
2EAB:A0 00      577         LDY  #0
2EAD:AE DC 15   578         LDX  STRTWD
2EB0:B1 50      579 SPL10L  LDA  ($50),Y
2EB2:9D F2 13   580         STA  SCRBUF,X
2EB5:E8         581         INX
2EB6:C8         582         INY
```

```
2EB7:CC 30 13  583          CPY  MODLWD+2
2EBA:D0 F4     584          BNE  SPL10L
2EBC:A9 20     585          LDA  #32
2EBE:9D F2 13  586          STA  SCRBUF,X
2EC1:A9 00     587          LDA  #0
2EC3:85 20     588          STA  LW
2EC5:85 24     589          STA  HC
2EC7:A9 27     590          LDA  #39
2EC9:85 21     591          STA  RW
2ECB:AD E8 13  592          LDA  EDITY
2ECE:85 22     593          STA  TW
2ED0:85 25     594          STA  VC
2ED2:AD 03 10  595          LDA  EDTBTM
2ED5:85 23     596          STA  BW
2ED7:20 16 22  597          JSR  REWRIT
2EDA:4C A9 29  598          JMP  SCORE
2EDD:EE 05 15  599 SPL1NX   INC  WRDCNT
2EE0:4C 22 2C  600          JMP  SPL1LP
2EE3:18        601 ERRRET   CLC
2EE4:A9 FF     602          LDA  #$FF
2EE6:60        603          RTS
2EE7:          604 ;
2EE7:          605 ; LET KID TRY TO CORRECT RESPONSE
2EE7:          606 ;
2EE7:A9 00     607 CORRSP   LDA  #FALSE
2EE9:8D E7 13  608          STA  NEWRSP
2EEC:20 5F 20  609          JSR  WPEDIT
2EEF:A5 20     610          LDA  LW
2EF1:48        611          PHA
2EF2:20 D0 18  612          JSR  SETWIN
2EF5:20 0C 1F  613          JSR  CLRWIN
2EF8:68        614          PLA
2EF9:85 20     615          STA  LW
2EFB:60        616          RTS
2EFC:          617 ;
2EFC:          618 ; DISPLAY THE CUE
2EFC:          619 ;
2EFC:A8        620 DSPCUE   TAY
2EFD:B9 D3 12  621          LDA  CUETXT-3,Y
2F00:38        622          SEC
2F01:E9 01     623          SBC  #1
2F03:85 48     624          STA  $48
2F05:B9 D4 12  625          LDA  CUETXT+1-3,Y
2F08:E9 00     626          SBC  #0
2F0A:85 49     627          STA  $49
2F0C:B9 D5 12  628          LDA  CUETXT+2-3,Y
2F0F:85 58     629          STA  $58
2F11:20 1F 1D  630          JSR  DISPLA
2F14:60        631          RTS
2F15:          632 ;
2F15:          633 ;
2F15:          634 ; DISPLAY WORD MISMATCH ERR MSG
2F15:          635 ;
2F15:20 D0 18  636 DSPWRD   JSR  SETWIN
2F18:20 0C 1F  637          JSR  CLRWIN
2F1B:A2 0F     638          LDX  #<MSG25
2F1D:A0 31     639          LDY  #>MSG25
2F1F:A9 00     640          LDA  #0
```

```
2F21:20 FB 1C  641         JSR  DISPWT
2F24:AD 51 13  642         LDA  RESPWD
2F27:38        643         SEC
2F28:E9 01     644         SBC  #1
2F2A:85 48     645         STA  $48
2F2C:AD 52 13  646         LDA  RESPWD+1
2F2F:E9 00     647         SBC  #0
2F31:85 49     648         STA  $49
2F33:AD 53 13  649         LDA  RESPWD+2
2F36:85 58     650         STA  $58
2F38:20 1F 1D  651         JSR  DISPLA
2F3B:A9 A4     652         LDA  #>MSG26
2F3D:85 48     653         STA  $48
2F3F:A9 0F     654         LDA  #<MSG26
2F41:85 49     655         STA  $49
2F43:AD A4 0F  656         LDA  MSG26
2F46:85 58     657         STA  $58
2F48:20 1F 1D  658         JSR  DISPLA
2F4B:A9 CB     659         LDA  #>MSG27
2F4D:85 48     660         STA  $48
2F4F:A9 0E     661         LDA  #<MSG27
2F51:85 49     662         STA  $49
2F53:AD CB 0F  663         LDA  MSG27
2F56:85 58     664         STA  $58
2F58:20 1F 1D  665         JSR  DISPLA
2F5B:A2 0F     666         LDX  #<MSG28
2F5D:A0 E0     667         LDY  #>MSG28
2F5F:A9 00     668         LDA  #0
2F61:20 FB 1C  669         JSR  DISPWT
2F64:A2 0E     670         LDX  #<MSG14
2F66:A0 24     671         LDY  #>MSG14
2F68:A9 00     672         LDA  #0
2F6A:20 FB 1C  673         JSR  DISPWT
2F6D:20 E7 2E  674         JSR  CORRSP
2F70:60        675         RTS
2F71:          676 ;
2F71:          677         CHN  MAIN10.ASM
```

```
2F71:              2 ; UNIMPLEMENTED ROUTINES MODULE
2F71:              3 ;
2F71:              4 ; EXAMPLE ROUTINE (DUMMY)
2F71:              5 ;
2F71:20 75 1F      6 EXARTN   JSR  CLRSCR
2F74:A9 0A         7          LDA  #10
2F76:85 25         8          STA  VC
2F78:A9 07         9          LDA  #7
2F7A:85 24        10          STA  HC
2F7C:A2 2F        11          LDX  #<BYPASS
2F7E:A0 86        12          LDY  #>BYPASS
2F80:A9 05        13          LDA  #5
2F82:20 FB 1C     14          JSR  DISPWT
2F85:60           15          RTS
2F86:             16          MSB  OFF
2F86:1B           17 BYPASS   DFB  27
2F87:45 58 41     18          ASC  "EXAMPLE  ROUTINE (BYPASSED)+"
2F8A:4D 50 4C
2F8D:45 20 52
2F90:4F 55 54
2F93:49 4E 45
2F96:20 28 42
2F99:59 50 41
2F9C:53 53 45
2F9F:44 29 2B
2FA2:             19 ;
2FA2:             20 ; FATAL ERROR SUBROUTINE
2FA2:             21 ;
2FA2:00           22 FATAL    BRK
2FA3:             23 ;
2FA3:             24 ; TERMINATION ROUTINE
2FA3:             25 ;
2FA3:             26 GRDRTN   EQU  *
2FA3:A9 03        27 TRMRTN   LDA  #3
2FA5:85 44        28          STA  $44
2FA7:20 51 A2     29          JSR  $A251      ;'MAXFILES 3'
2FAA:A9 00        30          LDA  #0
2FAC:8D 51 C0     31          STA  $C051
2FAF:8D 54 C0     32          STA  $C054
2FB2:A9 00        33          LDA  #0
2FB4:85 20        34          STA  LW
2FB6:85 24        35          STA  HC
2FB8:85 22        36          STA  TW
2FBA:85 25        37          STA  VC
2FBC:A9 28        38          LDA  #40
2FBE:85 21        39          STA  RW
2FC0:A9 18        40          LDA  #24
2FC2:85 23        41          STA  BW
2FC4:AE 76 10     42          LDX  SAVESP
2FC7:9A           43          TXS
2FC8:60           44          RTS
2FC9:             45 ;

*** SUCCESSFUL ASSEMBLY: NO ERRORS
```

```
SYMBOL TABLE    SORTED BY SYMBOL                          09-MAR-82 #000101 PAGE 03

   2395 ADDTIM          1312 ADLTXT          1EF0 ADVCRS          1FBF ADVSCR
   22D4 ASCBIN          22CB ASCDEC          2454 BADNUM          1925 BADPRT
     08 BADTYP            02 BAKARO          204E BAKOLD          FBDD BELOUT
   1DB0 BLKCH           202A BLOOP           13F1 BUFLEN          1CDC BUFLP
   1C74 BUFSET            23 BW              13A4 BYE             2A1E BYELP
   2F86 BYPASS          15CD BYTSRD          1122 CAPLNS          2A8E CAPOK
   1086 CAPPTR          11A4 CAPTXT          14E6 CASFLO            07 CASTOL
   13EA CHAR            23CF CHK10           23BE CHK20           27E5 CHKAST
   1EED CHKBUF          23AD CHKCHR          285A CHKLPA          281B CHKPLU
   1528 CHRCLS          15D6 CHRDIF          15B9 CHRTIM          14EA CHRTYP
     05 CLKSLT          C0D0 CLOCK           14EE CLRBTM          1F7E CLRSCR
   1F8C CLRWIN          15A8 CLSTYP          28C4 CMBIDN          2743 CMBILP
   2A51 CMP1LP          2B97 CNT1LP          2BC6 CNT2DN          2BAA CNT2LP
   2BC0 CNT2NX          26C9 CNVDUN          2773 COM1DN          274B COM1LP
   287B COM2DN          279C COM2LP          2897 COM3DN          28FF COM4DN
   28CF COM4LP          294B COM5LP          15DD COMBIN          174B COMBLP
   2504 CONVLP          2C03 CORCNT          2EE7 CORRSP          14E9 COUNT2
   14E7 COUNT             06 CRTMOU          218F CS0000          21BB CS0001
   21CA CS0002          21DC CS0003          21F2 CS0004          21FD CS0005
   220E CS0006          212E CS0100          264A CUECHR          1084 CUELEN
   25D0 CUELP           2B35 CUEMIG          2B88 CUESOK          15D2 CUESTA
   12D6 CUETXT          107F CUREXA          1080 CURPRA          15B5 CURTIM
   2301 CVTRT9          22E0 CVTSET          13D9 DATBUF          244C DECDUN
   23E0 DECODE          23EB DECOLP          1B01 DECPTR            04 DELCHR
   15D1 DOTPTR          23DF DIFF10          23CE DIFF20          15D9 DIFLOC
   1DBB DISPCH          1D1F DISPLA          1D22 DISPLP          1CFB DISPWT
   2056 DONE            13E1 DRIVE           1BD7 DSKEOF          1BE7 DSKEOL
   2EFC DSPCUE          1DCD DSPDUN          1D1A DSPNEW          1D0D DSPSTR
   2F15 DSPWRD          2211 EC0000          2176 EC0100          13E8 EDITY
   2969 EDIT            1083 EDTBTM          13E9 EDTMOD          2098 EIF000
   212B EIF001          2121 EIF003          21B8 EIF005          1EEF EIF016
   1EEF EIF017          1F20 EIF018          1F20 EIF019          208E ELS000
   2124 ELS002          211A ELS003          21A6 ELS005          1EE2 ELS017
   1F1C ELS019          297D ENDCUE          15D7 ENDSTR            05 EOFERR
   2625 EOSION          2EE3 ERRRET            02 ERRSPL          2214 ESR000
   1E6E ESR001          22CA EWH003          22BF EWH004          1EC3 EWH005
   1FB6 EWH006          1FB2 EWH007          1170 EXAITM          113C EXALN9
   10BA EXAPTR          2F71 EXARTN          11E0 EXATXT            00 FALSE
   2FA2 FATAL           03D8 FILMOR          13DD FILNAM          1354 FILNM9
   13E5 FILTYP          1E3E FINDST          13A7 FNMLEN          13A8 FSTNAM
     03 FWDARO          1CD3 GETBUF          238A GETCHR          237F GETCUR
   2302 GETDGT          03DC GETPRM          13EB GOTBLK          1CF7 GOTBUF
   1E16 GOTCH           2690 GOTCUE          1077 GOTLSN          25A1 GOTPD
   2913 GOTPD2          24DB GOTPRA          1078 GOTPRT          2367 GOTRET
   1B9C GOTTXT          2FA3 GRBRTN            24 HC              1F52 HILOOP
   1F21 HIROUT          13EF HITBGN          14E5 HITBOL          13ED HITEND
   14F8 IMGLOC          2165 INS1            215D INS2            214F INS3
   2149 INS4            216D INSEND        ?   01 INSERT          12C7 ITMTXT
   299C JOINDN          298D JOINLP          139B JUSJOI          1DF7 KBD1
   1E2F KBD3            1DCE KBDIN           1DEA KBDLP           13F0 LASCHR
   15DB LASEND          2028 LASLIN          107D LASPRT          14F2 LASSNT
   15D3 LENDIF          1079 LESSON          13BC LNMLEN          199D LODLSN
   1915 LODPRT          1372 LSNFIL          107A LSNMEM            01 LSNUNT
   13BD LSTNAM          2CA6 LT3               20 LW                04 MAXADL
     14 MAXCAP            04 MAXCUE            0C MAXEXA            30 MAXPRA
     05 MAXSNT          2D74 MAYBE           2D68 MDLLCA          1868 MISSD3
   12C1 MODEL           134E MODLWD            05 MODTOL          283D MOVADL
   2809 MOVCUE          232D MOVDUN          2321 MOVE            0D5D MSG10
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SYMBOL TABLE   SORTED BY SYMBOL                            09-MAR-82 #000101 PAGE 84

  0D89 MSG11      0DB9 MSG12      0E24 MSG14      0B0D MSG1
  0DE8 MSG13      0E3F MSG15      0E6F MSG16      0EA2 MSG17
  0EBF MSG18      0EC9 MSG19      0ED7 MSG20      0F19 MSG22
  0F42 MSG23      0B3B MSG2       0EF1 MSG21      0F5E MSG24
  0F81 MSG25      0FA4 MSG26      0FC8 MSG27      0FF0 MSG28
  1007 MSG29      0B8D MSG3       1025 MSG30      105D MSG31
  0BD8 MSG4       0C0C MSG5       0C1C MSG6       0C74 MSG7
  0CA1 MSG8       0CF1 MSG9       2323 MVLOOP    ?14F4 NADDL
  14F3 NCUES      15D0 NDGTS      1082 NERRS      1D63 NEWLIN
  13E7 NEWRSP     14F0 NITEMS       FF NOALLO     1CF9 NOBUFF
    00 NOERR      1894 NOMORE       01 NONERR     2D8E NONSPL
  14E8 NORMAL     2DA0 NOT2ND     2254 NOTBLK     2A3A NOTBYE
  27D0 NOTDEL     1A1A NOTINX     25BC NOTLC      1D57 NOTNAM
  17EE NOTRIT     2DC0 NOTRPT     2A64 NOTSAM     1D75 NOTSPE
  1DA8 NOTWRP     2277 NOWRAP     1081 NRIGHT     15C9 NSECS
  14F1 NSENTS     107B NUMLNS     15CA NUMPTS     227F NXTCHR
  188A NXTLSN     284F NXTOL1     2046 NXTOLD     1859 NXTPRA
  2685 NXTOCH     24D5 NXTSNT     15CB NXTTXT     13EE OLDX
    01 ONEBYT     19B9 ONEDGT       01 OPNCMD     1C3E OPNSET
    00 OVRWRT     1A4E PARTLP     107C PART       2E73 PARTWD
  2AB6 PEROK        0A POSCMD     1BF7 POSSET     17B1 PRACLP
  118A PRAITM     1156 PRALNS     1085 PRANDX     10EE PRAPTR
  2457 PRARTN     1204 PRATXT     0B08 PROMPT     26E2 PRTLP
  1A63 PTRLP      107E PTRPTR     230F PTRSET     1294 PTRTXT
  2236 PUTCH      2673 PUTCUE     2EA1 PUTRSP     2989 QJOIN
  2AC1 QLK1LP     2AD9 QLK2LP     2B0A QLK3LP     2B21 QLK4LP
  233C QTRLP        03 RDCMD      1BB7 RDDISK     1BBC RDDKLP
  19A7 RDLSN      1BA8 RDSET      1B38 RDTEXT     236D RDTIME
  192B READPT     14EF REASON     12C4 RESPNS     1351 RESPWD
  15CE RESULT       06 RETCHR     1EC4 RETCRS     2287 REWDUN
  2220 REWLP      2215 REWRIT    ?2A60 RITANS     2608 RITPAR
  258C RMVDUN     2532 RMVLP      14F5 RMVON      2A05 RSP1DN
  29C7 RSP1LP     2A01 RSP2DN     29E0 RSP2LP     2D84 RSPLCA
  2BEB RSPLES       21 RW         2DD1 SAMERR     14ED SAVCHR
  228E SAVCLR     1076 SAVESP     29A9 SCORE      1F6D SCRADD
  13F2 SCRBUF     14E3 SCRCHR     15D8 SCRCNT     224C SCRFUL
  1FC8 SCROLL     2337 SECLP      24A4 SENTLP     18D0 SETWIN
  2036 SLOOP2     200A SLOOP      13E3 SLOT       2580 SNTCHR
  2868 SNTTX2     2565 SOMELP     2EB0 SPL10L     2C22 SPL1LP
  2EDD SPL1NX     2C4C SPL2DN     2C3B SPL2LP     2C6C SPL3DN
  2C5F SPL3LP     2C8C SPL4LP     2CD1 SPL5LP     2CF0 SPL5NX
  2CFC SPL6LP     2D1B SPL6NX     2D27 SPL7LP     2E86 SPL8DN
  2E46 SPL8LP     2E81 SPL8NX     2E94 SPL9LP     2DB1 SPLERR
  20AB SRC000     1E49 SRC001     267F STATE2     259D STORPD
  14EC STRPNO     15C5 STRTTM     15DC STRTWD     13EC STSAVE
  1354 STUFIL     168C STULP      12AC STUTXT       00 STUUNT
  1390 SUMTHG     15BD TENMIN     1B6D TEXTLP     186D THRERT
  23BD TIMDIF     1E2A TIMEUP     2FA3 TRMRTN       80 TRUE
  2D58 TRYAAN     13D5 TSLIST     15C1 TWEMIN       22 TW
  6000 TXTBUF     2576 TXTCHR       01 TXTTYP       05 TYPDBY
  2E15 TYPDCR     15D4 TYPERR     14EB TYPRET     1C0B UNTSET
    25 VC         1B1E WAIT15     1B2B WAIT30     2332 WAIT
  2351 WAITCR     18EF WARNCR     2350 WATDUN     2C19 WDCTOK
  2C98 WDSDIF     2295 WHL003     22A3 WHL004     1E98 WHL005
  1F96 WHL006     1FA2 WHL007     205F WPEDIT     15D5 WRDCNT
  14E4 WRDLEN     15DA WRDNUM     1E6F WRDWRP     13D1 WRKBUF
  14F6 WRKSPC     1914 WRN1DN     233E WT1        1FFC XLOOP
  1FD1 YLOOP      2495 ZROADL     2488 ZROCUE     18C2 ZROITM
```

```
      00 OVRWRT          00 NOERR           00 FALSE           00 STUUNT
      01 OPNCMD        ? 01 INSERT          01 NONERR          01 TXTTYP
      01 LSNUNT          01 ONEBYT          02 BAKARO          02 ERRSPL
      03 RDCMD           03 FWDARO          04 MAXCUE          04 DELCHR
      04 MAXADL          05 MODTGL          05 EOFERR          05 TYPDBY
      05 MAXSNT          05 CLKSLT          06 RETCHR          06 CRTMOU
      07 CASTGL          08 BADTYP          0A POSCMD          0C MAXEXA
      14 MAXCAP          20 LW              21 RW              22 TW
      23 BW              24 HC              25 VC              30 MAXPRA
      80 TRUE            FF NOALLO        03D6 FILMOR        03DC GETPRM
    0B08 PROMPT        0B0D MSG1          0B3B MSG2          0B8D MSG3
    0BD8 MSG4          0C0C MSG5          0C1C MSG6          0C74 MSG7
    0CA1 MSG8          0CF1 MSG9          0D5D MSG10         0D89 MSG11
    0DB9 MSG12         0DE8 MSG13         0E24 MSG14         0E3F MSG15
    0E6F MSG16         0EA2 MSG17         0EBF MSG18         0EC9 MSG19
    0ED7 MSG20         0EF1 MSG21         0F19 MSG22         0F42 MSG23
    0F5E MSG24         0F81 MSG25         0FA4 MSG26         0FC8 MSG27
    0FF0 MSG28         1007 MSG29         1025 MSG30         105D MSG31
    1076 SAVESP        1077 GOTLSN        1078 GOTPRT        1079 LESSON
    107A LSNMEM        107B NUMLNS        107C PART          107D LASPRT
    107E PTRPTR        107F CUREXA        1080 CURPRA        1081 NRIGHT
    1082 NERRS         1083 EDTBTM        1084 CUELEN        1085 PRANDX
    1086 CAPPTR        10BA EXAPTR        10EE PRAPTR        1122 CAPLNS
    113C EXALNS        1156 PRALNS        1170 EXAITM        118A PRAITM
    11A4 CAPTXT        11E0 EXATXT        1204 PRATXT        1294 PTRTXT
    12AC STUTXT        12C1 MODEL         12C4 RESPNS        12C7 ITMTXT
    12D6 CUETXT        1312 ADLTXT        134E MODLWD        1351 RESPWD
    1354 FILNMS        1354 STUFIL        1372 LSNFIL        1390 SUMTHG
    139B JUSJOI        13A4 BYE           13A7 FNMLEN        13A8 FSTNAM
    13BC LNMLEN        13BD LSTNAM        13D1 WRKBUF        13D5 TSLIST
    13D9 DATBUF        13DD FILNAM        13E1 DRIVE         13E3 SLOT
    13E5 FILTYP        13E7 NEWRSP        13E8 EDITY         13E9 EDTMOD
    13EA CHAR          13EB GOTBLK        13EC STSAVE        13ED HITEND
    13EE OLDX          13EF HITBGN        13F0 LASCHR        13F1 BUFLEN
    13F2 SCRBUF        14E3 SCRCHR        14E4 WRDLEN        14E5 HITBOL
    14E6 CASFLG        14E7 COUNT         14E8 NORMAL        14E9 COUNT2
    14EA CHRTYP        14EB TYPRET        14EC STRPNO        14ED SAVCHR
    14EE CLRBTM        14EF REASON        14F0 NITEMS        14F1 NSENTS
    14F2 LASSNT        14F3 NCUES        ?14F4 NADDL         14F5 RMVON
    14F6 WRKSPC        14F8 IMGLOC        1528 CHRCLS        15A8 CLSTYP
    15B5 CURTIM        15B9 CHRTIM        15BD TENMIN        15C1 TWEMIN
    15C5 STRTTM        15C9 NSECS         15CA NUMPTS        15CB NXTTXT
    15CD BYTSRD        15CE RESULT        15D0 NDGTS         15D1 DGTPTR
    15D2 CUESTA        15D3 LENDIF        15D4 TYPERR        15D5 WRDCNT
    15D6 CHRDIF        15D7 ENDSTR        15D8 SCRCNT        15D9 DIFLOG
    15DA WRDNUM        15DB LASEND        15DC STRTWD        15DD COMBIN
    168C STULP         174B COMBLP        17B1 PRACLP        17EE NOTRIT
    1859 NXTPRA        1868 MISSD3        186D THRERT        188A NXTLSN
    1894 NOMORE        18C2 ZROITM        18D0 SETWIN        18EF WARNCR
    1914 WRN1DN        1915 LODPRT        1925 BADPRT        192B READPT
    199D LOBLSN        19A7 RDLSN         19B9 ONEDOT        1A1A NOTINX
    1A4E PARTLP        1A63 PTRLP         1B01 DECPTR        1B1E WAIT15
    1B2B WAIT30        1B38 RDTEXT        1B6D TEXTLP        1B9C GOTTXT
    1BA8 RDSET         1BB7 RDDISK        1BBC RDDKLP        1BD7 DSKEOF
    1BE7 DSKEOL        1BF7 POSSET        1C0B UNTSET        1C3E OPNSET
    1C74 BUFSET        1CD3 GETBUF        1CDC BUFLP         1CED CHKBUF
    1CF7 GOTBUF        1CF9 NOBUFF        1CFB DISPWT        1D0D DSPSTR
    1D1A DSPNEW        1D1F DISPLA        1D22 DISPLP        1D57 NOTNAM
    SYMBOL TABLE    SORTED BY ADDRESS                   09-MAR-82 #000101 PAGE 86

      1D63 NEWLIN        1D75 NOTSPE        1DA8 NOTWRP        1DB0 BLKCH
      1DBB DISPCH        1DCD DSPDUN        1DCE KBDIN         1DEA KBDLP
      1DF7 KBD1          1E16 GOTCH         1E2A TIMEUP        1E2F KBD3
      1E3E FINDST        1E49 SRC001        1E6E ESR001        1E6F WRDWRP
      1E98 WHL005        1EC3 EWH005        1EC4 RETCRS        1EE2 ELS017
      1EEF EIF016        1EEF EIF017        1EF0 ADVCRS        1F1C ELS019
      1F20 EIF018        1F20 EIF019        1F21 HIROUT        1F52 HILOOP
      1F6D SCRADD        1F7E CLRSCR        1F8C CLRWIN        1F96 WHL006
      1FA2 WHL007        1FB2 EWH007        1FB6 EWH006        1FBF ADVSCR
      1FC8 SCROLL        1FD1 YLOOP         1FFC XLOOP         200A SLOOP
      2029 LASLIN        202A BLOOP         2036 SLOOP2        2046 NXTOLD
      204E BAKOLD        2056 DONE          205F WPEDIT        208E ELS000
      2098 EIF000        20AB SRC000        211A ELS003        2121 EIF003
      2124 ELS002        212B EIF001        212E CS0100        2149 INS4
      214F INS3          215D INS2          2165 INS1          216D INSEND
      2176 EC0100        218F CS0000        21A6 ELS005        21B8 EIF005
      21BB CS0001        21CA CS0002        21DC CS0003        21F2 CS0004
      21FD CS0005        220E CS0006        2211 EC0000        2214 ESR000
      2215 REWRIT        2220 REWLP         2236 PUTCH         224C SCRFUL
      2254 NOTBLK        2277 NOWRAP        227F NXTCHR        2287 REWDUN
      228E SAVCLR        2295 WHL003        22A9 WHL004        22BF EWH004
      22CA EWH003        22CB ASCDEC        22D4 ASCBIN        22E0 CVTSET
      2301 CVTRTS        2302 GETDOT        230F PTRSET        2321 MOVE
      2323 MVLOOP        232D MOVDUN        2332 WAIT          2337 SECLP
      233C QTRLP         233E WT1           2350 WATDUN        2351 WAITCR
      2367 GOTRET        236D RDTIME        237F GETCUR        238A GETCHR
      2395 ADDTIM        23AD CHKCHR        23BD TIMDIF        23BE CHK20
      23CE DIFF20        23CF CHK10         23DF DIFF10        23E0 DECODE
      23EB DECOLP        244C DECDUN        2454 BADNUM        2457 PRARTN
      2488 ZROCUE        2495 ZROADL        24A4 SENTLP        24D5 NXTSNT
      24DB GOTPRA        2504 CONVLP        2532 RMVLP         2565 SOMELP
      2576 TXTCHR        2580 SNTCHR        258C RMVDUN        259D STORPD
      25A1 GOTPD         25BC NOTLC         25D0 CUELP         2608 RITPAR
      2625 EQSIGN        264A CUECHR        2673 PUTCUE        267F STATE2
      2685 NXTQCH        2690 GOTCUE        26C9 CNVDUN        26E2 PRTLP
      2743 CMBILP        274B COM1LP        2773 COM1DN        279C COM2LP
      27D0 NOTDEL        27E5 CHKAST        2809 MOVCUE        281D CHKPLU
      283D MOVADL        284F NXTOL1        285A CHKLPA        2868 SNTTX2
      287B COM2DN        2897 COM3DN        28C4 CMBIDN        28CF COM4LP
      28FF COM4DN        2913 GOTPD2        294B COM5LP        2969 EDIT
      297D ENDCUE        2989 QJOIN         298D JOINLP        299C JOINDN
      29A9 SCORE         29C7 RSP1LP        29E0 RSP2LP        2A01 RSP2DN
      2A05 RSP1DN        2A1E BYELP         2A3A NOTBYE        2A51 CMP1LP
     ?2A60 RITANS        2A64 NOTSAM        2A8E CAPOK         2AB6 PEROK
      2AC1 GLK1LP        2AD9 GLK2LP        2B0A GLK3LP        2B21 GLK4LP
      2B35 CUEMIS        2B88 CUESOK        2B97 CNT1LP        2BAA CNT2LP
      2BC0 CNT2NX        2BC6 CNT2DN        2BEB RSPLES        2C03 CORCNT
      2C19 WDCTOK        2C22 SPL1LP        2C3B SPL2LP        2C4C SPL2DN
      2C5F SPL3LP        2C6C SPL3DN        2C8C SPL4LP        2C98 WDSDIF
      2CA6 LT3           2CD1 SPL5LP        2CF0 SPL5NX        2CFC SPL6LP
      2D1B SPL6NX        2D27 SPL7LP        2D58 TRYAAN        2D60 MDLLCA
      2D74 MAYBE         2D84 RSPLCA        2D8E NONSPL        2DA0 NOT2ND
      2DB1 SPLERR        2DC0 NOTRPT        2DD1 SAMERR        2E15 TYPDCR
      2E46 SPL8LP        2E73 PARTWD        2E81 SPL8NX        2E86 SPL8DN
      2E94 SPL9LP        2EA1 PUTRSP        2EB0 SPL10L        2EDD SPL1NX
      2EE3 ERRRET        2EE7 CORRSP        2EFC DSPCUE        2F15 DSPWRD
      2F71 EXARTN        2F86 BYPASS        2FA2 FATAL         2FA3 GRDRTN
      2FA3 TRMRTN        6000 TXTBUF        C0D0 CLOCK         FBDD BELOUT
```

```
99N

SOURCE FILE: JUMP
SOURCE FILE: LABELS
SOURCE FILE: LOGON
SOURCE FILE: EXAM
SOURCE FILE: SUBS
SOURCE FILE: LESEX
** OOPS! DOS ERROR! CODE=06
```

```
99N

SOURCE FILE: JUMP
SOURCE FILE: LABELS
SOURCE FILE: LOGON
SOURCE FILE: EXAM
SOURCE FILE: SUBS
SOURCE FILE: LESEX
SOURCE FILE: MESSAGES
0000:              1 *----JUMP----
                   2 ****************************************************************
0000:              3 * $15DD = CALL 5597
                   4 ****************************************************************
0000:              5 *
----- NEXT OBJECT FILE NAME IS JUMP.OBJ0
3000:              6          ORG  $3000
3000:4C 33 30      7          JMP  LOGON      FROM $16C3
3003:4C C0 30      8          JMP  EXPL      EXAMPLE ROUTINE FROM $2F71
3006:4C 6C 33      9          JMP  DISPWP    DISPLAY MESSAGE PATCH TO ADD DELAY FROM $1DC4
3009:4C C6 34     10          JMP  SCPTCH    SCORING PATCH FROM $29A9
300C:4C DC 34     11          JMP  SCPTC2    COUNT THIS CURSOR ON LEFT FROM $2EEC
300F:4C 1F 34     12          JMP  NOSCR2    PREVENT SCROLLING BY CLEARING WINDOW FROM $1834
3012:4C EC 34     13          JMP  SPLCNT    RESET ABORT COUNTER WHEN SPELLING CORRECTION FROM $2DF4
3015:4C F8 34     14          JMP  FIXBEL    BELL ONLY IF SAME CURSOR POSITION FROM $20BA
3018:4C EA 33     15          JMP  FLHCOR    FLASH CORRECT SENTENCE FROM $1816
301B:4C F2 34     16          JMP  ADDSPC    ADD LINE AFTER VERY GOOD FROM $17E1
301E:4C 17 34     17          JMP  NOSCRL    PREVENT SCROLLING BY CLEARING DISPLAY WINDOW FROM $18EF
3021:4C 27 34     18          JMP  TERM      TERMINATION ROUTINE FROM $2FA2
3024:4C 30 30     19          JMP  MONIT
3027:4C 30 30     20          JMP  MONIT
302A:4C 30 30     21          JMP  MONIT
302D:4C 30 30     22          JMP  MONIT
3030:00           23 MONIT    BRK
3031:00           24          BRK
3032:00           25          BRK
3033:             26          LST  ON
3033:             27          CHN  LABELS
3033:              1 *LST OFF
```

```
3033:           3 ;----LABELS----
3033:           4 ;
                5 ****************************************************
3033:           6 ; $15DD = CALL 5597
                7 ****************************************************
3033:           8 ;
1F21:           9 HIROUT  EQU  $1F21     HI RESOLUTION DISPLAY ROUTINE
3033:          10 ;
1F7E:          11 CLRSCR  EQU  $1F7E       CLEAR SCREEN
3033:          12 ;
1F8C:          13 CLRWIN  EQU  $1F8C     CLEAR EDIT WINDOW
3033:          14 ;
1B1E:          15 WAIT15  EQU  $1B1E     WAIT 15 SECONDS OR FOR RETURN
3033:          16 ;
1CFB:          17 DISPWT  EQU  $1CFB     DISPLAY TEXT POINTED AT BY X ABD Y
3033:          18 ;
3033:          19 ;
3033:          20 ; EDIT WINDOW BOUNDARIES
3033:          21 ;
0020:          22 LW      EQU  32        LEFT EDGE
0021:          23 RW      EQU  33        RIGHT EDGE
0022:          24 TW      EQU  34        TOP OF WINDOW
0023:          25 BW      EQU  35        BOTTOM OF WINDOW
13E8:          26 EDITY   EQU  $13E8     TOP OF WINDOW WITHIN EDIT ROUTINE
1083:          27 EDTBTM  EQU  $1083     BOTTOM OF WINDOW WITHIN EDIT ROUTINE
3033:          28 ;
3033:          29 ;
3033:          30 ; CURSOR POSITION (FOR START OF DISPLAY ???)
3033:          31 ;
0024:          32 HC      EQU  36          HORIZONTAL POSIT
0025:          33 VC      EQU  37          VERTICLE POSIT
3033:          34 ;
3033:          35 ;
13E7:          36 NEWRSP  EQU  $13E7       FLAG TO SIGNAL
3033:          37 ;        NEW (0) OR
3033:          38 ;        OLD (FF) RESPONSE
3033:          39 ;
3033:          40 ;
205F:          41 WPEDIT  EQU  $205F       EDITOR
3033:          42 ;
13A8:          43 FSTNAM  EQU  $13A8     FIRST NAME
13A7:          44 FNMLEN  EQU  $13A7     LENGHT OF FIRST NAME
3033:          45 ;
3033:          46 ;
3033:          47 ; DISPLAY MESSAGE
1D1F:          48 DISPLA  EQU  $1D1F
3033:          49 ;
3033:          50 ;
3033:          51 ; GET CURRENT TIME
237F:          52 GETCUR  EQU  $237F
3033:          53 ;
3033:          54 ;
3033:          55 ; SOUND BELL SYSTEM ROUTINE
FBDD:          56 BELOUT  EQU  $FBDD
3033:          57 ;
3033:          58         LST  ON
3033:          59         CHN  LOGON
3033:           1 ;LST OFF
```

```
3033:              3 ;----LOGON----
3033:              4 ;
3033:              5 LOGON   EQU  *
3033:20 7E 1F      6         JSR  CLRSCR
3036:              7 ;
3036:85 25         8         STA  VC
3038:A9 02         9         LDA  #2
303A:85 20        10         STA  LW
303C:85 24        11         STA  HC
303E:             12 ;
303E:A2 39        13         LDX  #<SWRL
3040:A0 D9        14         LDY  #>SWRL
3042:A9 00        15         LDA  #0
3044:20 FB 1C     16         JSR  DISPWT
3047:A2 3A        17         LDX  #<SWRL2
3049:A0 9C        18         LDY  #>SWRL2
304B:A9 0A        19         LDA  #10
304D:20 FB 1C     20         JSR  DISPWT
3050:             21 ;
3050:             22 ;
3050:             23 ;
3050:20 7E 1F     24         JSR  CLRSCR    CLEAR SCREEN
3053:             25 ;
3053:85 20        26         STA  LW        ?????
3055:85 25        27         STA  VC        VERTICAL POSITION
3057:             28 ;
3057:A2 35        29         LDX  #<LOGONM  X GETS LOW BYTE OF MESSAGE ADDRESS
3059:A0 06        30         LDY  #>LOGONM  Y GETS HIGH BYTE OF MESSAGE ADDRESS
305B:A9 00        31         LDA  #0        ACCUM GETS SECONDS OF DELAY AFTER MESSAGE APPEARS
305D:             32 ;
305D:20 FB 1C     33         JSR  DISPWT    DISPLAY LOGON MESSAGE
3060:             34 ;
3060:A9 0A        35         LDA  #10
3062:85 25        36         STA  VC        VERTICAL POSITION FOR RESPONCE
3064:A9 00        37         LDA  #0        HORIZONTAL POSITION
3066:85 24        38         STA  HC
3068:             39 ;
3068:             40 ;
3068:             41 ;
3068:             42 ; RESTRICT WINDOW SO NAME IS A MAXIMUM OF 20 CHARACTERS
3068:             43 ;
3068:             44 ;-----------DOES.NOT.WORK....CRASHES.AT.END.OF.SECOND.LINE-------
3068:             45 ;
3068:             46 ;
3068:A9 0D        47         LDA  #13       SET TOP OF WINDOW
306A:85 22        48         STA  TW
306C:8D E8 13     49         STA  EDITY
306F:             50 ;
306F:A9 11        51         LDA  #17       SET BOTTOM OF WINDOW
3071:             52 ;
3071:85 23        53         STA  BW
3073:8D 83 10     54         STA  EDTBTM
3076:             55 ;
3076:A9 27        56         LDA  #39       SET RIGHT EDGE OF WINDOW
3078:85 21        57         STA  RW
307A:             58 ;
307A:A9 00        59         LDA  #0        SET LEFT EDGE OF WINDOW
307C:85 20        60         STA  LW
307E:85 24        61         STA  HC
3080:             62 ;
3080:             63 ;
3080:             64 ;
3080:A9 FF        65         LDA  #$        SET FLAG FOR
```

```
3080:A9 FF      65         LDA  #$FF      SET FLAG FOR
3082:8D E7 13   66         STA  NEWRSP    NEW RESPONSE
3085:           67 ;
3085:           68 ; JSR WPEDIT INPUT/EDIT LOGON RESPONSE
3085:20 88 20   69 GTNAME  JSR  WPEDIT+$29 BYPASS WINDOW SENT UP SO CAN USE OWN
3088:A5 24      70         LDA  HC        WON'T ACCEPT IF CURSOR
308A:F0 F9      71         BEQ  GTNAME    IN COLUMN 0
308C:           72 ;
308C:           73 ;
308C:           74 ; MOVE NAME FROM SCREEN INTO FIRST NAME AREA
308C:           75 ; COPIED TECHNIQUE FROM RESPONCE SCORING ROUTINE
308C:           76 ;
308C:           77 ; SET UO 50.51 TO POINT AT SCREEN WHERE NAME HAS BEEN PUT
308C:A5 25      78         LDA  VC
308E:0A         79         ASL  A
308F:AA         80         TAX
3090:BD F8 14   81         LDA  $14F8.X   IMGLOC IMAGE LOCATION
3093:85 50      82         STA  $50
3095:BD F9 14   83         LDA  $14F9.X
3098:85 51      84         STA  $51
309A:           85 ;
309A:           86 ;
309A:           87 ; SET 52.53 TO POINT TO FIRST NAME AREA
309A:A9 A8      88         LDA  #>FSTNAM
309C:85 52      89         STA  $52
309E:A9 13      90         LDA  #<FSTNAM
30A0:85 53      91         STA  $53
30A2:           92 ;
30A2:           93 ; COPY FROM SCREEN TO FIRST NAME UNTIL FIND A SPACE
30A2:A9 00      94         LDA  #0
30A4:A8         95         TAY
30A5:B1 50      96 MOVEIT  LDA  ($50).Y
30A7:C9 20      97         CMP  #32
30A9:F0 07      98         BEQ  MOVED
30AB:91 52      99         STA  ($52).Y
30AD:C8        100         INY
30AE:C0 14     101         CPY  #20       MAXIMUM OF 20 CHARACTERS IN NAME
30B0:D0 F3     102         BNE  MOVEIT
30B2:EA        103 MOVED   NOP
30B3:          104 ;
30B3:          105 ;
30B3:          106 ;   PUT NAME LENGTH WHERE REST OF FIRST NAME ROUTINE WILL GET IT
30B3:          107 ;
30B3:A2 02     108         LDX  #2
30B5:98        109         TYA
30B6:9D AC 12  110         STA  $12AC.X   STUTXT
30B9:          111 ;
30B9:          112 ;
30B9:          113 ;
30B9:          114 ;
30B9:60        115         RTS
30BA:          116 ;
30BA:          117         LST  ON
30BA:          118         CHN  EXAM
30BA:            1 ;LST OFF
```

```
30BA:                3 ;----EXAM----
30BA:                4 ;
30BA:                5 ;.VARIABLES.USED.BY.EXAMPLE.ROUTINE
30BA:                6 ;
30BA:28              7 DELAYC  DFB  40       AMOUNT OF DELAY BETWEEN CHARACTERS
30BB:00              8 DELAY   DFB  0        VALUE USED BY DELAY ROUTINE
30BC:00              9 BKUP    DFB  0        HORIZONTAL LOCATION OF START OF LAST ENTRY
30BD:00             10 HBKUP   DFB  0        TEMP STORAGE OF HORIZONTTAL LOCATION
30BE:00             11 VBKUP   DFB  0        TEMP STORAGE OF VERTICLE
30BF:09             12 FLASHC  DFB  9        NUMBER OF TIMES TO FLASH
30C0:05             13 FLASH   DFB  5        VALUE USED WHN FLAHING
30C1:01             14 LESSON  DFB  1        LESSON IN USE
30C2:01             15         DFB  1        .
30C3:01             16         DFB  1        . PREVIOUS EXAMPLE WITHIN LESSONS
30C4:01             17         DFB  1        . RANGES FROM 2 TO 0
30C5:01             18         DFB  1        .
30C6:00             19 INSFLG  DFB  0        FLAG FOR  WAY TO DISPLAY INSTRUCTION
30C7:02             20 LE      DFB  2        LEFT EDGE OF SCREEN FOR EXAMPLE ROUTINE
30C8:               21 ;
                    22 ***************************************************************************
30C8:               23 ;
30C8:               24 EXPL    EQU  *        ENTRY POINT TO EXAMPLE ROUTINE
30C8:               25 ;
                    26 ***************************************************************************
30C8:20 7E 1F       27         JSR  CLRSCR   CLEAR SCREEN
30CB:20 70 34       28         JSR  LESEXI   DETERMINE LESSON AND EXAMPLE AND EXAMPLE POINTERS
                    29 ***************************************************************************
30CE:               30 ; INTRODUCTION TO EXAMPLE ROUTINE
30CE:20 7C 33       31         JSR  FULSCR   SET DISPLAY AT TOP RIGHT
30D1:A9 00          32         LDA  #0
30D3:85 25          33         STA  VC
30D5:               34 ;
30D5:A2 35          35         LDX  #<INTRO1 FIRST PART OF EXAMPLE
30D7:A0 9D          36         LDY  #>INTRO1
30D9:A9 00          37         LDA  #0
30DB:8D BB 30       38         STA  DELAY    NO DELAY BETWEEN CHARACTERS OR AFTER PRINTING
30DE:20 FB 1C       39         JSR  DISPWT
30E1:               40 ;
30E1:AD C1 30       41         LDA  LESSON   IF LESSON 4 THEN ADD S TO JOINER
30E4:C9 04          42         CMP  #4
30E6:D0 09          43         BNE  INT3
30E8:A2 35          44         LDX  #<INTRO2
30EA:A0 CB          45         LDY  #>INTRO2
30EC:A9 00          46         LDA  #0
30EE:20 FB 1C       47         JSR  DISPWT
30F1:               48 ;
30F1:A2 35          49 INT3    LDX  #<INTRO3 DISPLAY REMAINDER OF INTROCUTION
30F3:A0 CD          50         LDY  #>INTRO3
30F5:A9 02          51         LDA  #2       TWO SECOND DELAY BEFORE SHOWING SENTENCES
30F7:20 FB 1C       52         JSR  DISPWT
                    53 ***************************************************************************
30FA:               54 ;PUT EXAMPLE SENTENCES ON SCREEN
30FA:A9 0B          55         LDA  #11      AT LINE 11
30FC:85 25          56         STA  VC
30FE:AE 62 34       57         LDX  EXA1H    LOAD HI BYTE OF MESSAGE ADDRESS
3101:AC 63 34       58         LDY  EXA1L    LOAD LO BYTE OF MESSAGE ADDRESS
3104:A9 05          59         LDA  #5       5 SECOND DELAY
3106:20 FB 1C       60         JSR  DISPWT
                    61 ***************************************************************************
3109:20 D9 32       62         JSR  RETURN   DISPLAY  MESSAGE AT BOTTOM OF SCREEN AND WAIT FOR RETURN
                    63 ***************************************************************************
310C:               64 ;FLASH ARROW WHERE GOING TO PUT NEXT INSTRUCTION
310C:A9 00          65         LDA  #0       ACCUMULATOR SPCIFIES ON WHICH LINE ARROW WILL APPEAR
```

```
310C:A9 00      65          LDA  #0         ACCUMULATOR SPCIFIES ON WHICH LINE ARROW WILL APPEAR


310E:20 92 33   66          JSR  STFLNL
                67 *************************************************************************
3111:           68 ;PUT FIRST INSTRUCTION AT TOP OF SCREEN
3111:A2 38      69          LDX  #<IN1
3113:A0 A6      70          LDY  #>IN1
3115:A9 02      71          LDA  #2         2 SECOND DELAY
3117:20 FB 1C   72          JSR  DISPWT
                73 *************************************************************************
311A:A9 00      74          LDA  #0
311C:20 92 33   75          JSR  STFLNL     FLASH ARROW AT INSTRUCTION
                76 *************************************************************************
311F:           77 ;FLASH ARROW WHERE GOING TO PUT NEXT INSTRUCTION
311F:A9 11      78          LDA  #17        ACCUMULATOR SPCIFIES ON WHICH LINE ARROW WILL APPEAR
3121:20 92 33   79          JSR  STFLNL
                80 *************************************************************************
3124:           81 ; TYPE OUT FIRST PART OF COMBINED SENTENCES
3124:AE 64 34   82          LDX  EXAD1H
3127:AC 65 34   83          LDY  EXAD1L
312A:AD BA 30   84          LDA  DELAYC     SET DELAY BETWEEN
312D:8D BB 30   85          STA  DELAY      CHARACTERS
3130:A9 11      86          LDA  #17        PUT ON LINE 17
3132:85 25      87          STA  VC
3134:AD C7 30   88          LDA  LE         AT LEFT EDGE
3137:85 24      89          STA  HC
3139:20 FB 1C   90          JSR  DISPWT
313C:20 26 33   91          JSR  SAVEVH     SAVE LAST DISPLAYED POSITION
                92 *************************************************************************
313F:20 94 33   93          JSR  STFLN1     FLASH THE ARROW AT THE MESSAGE
                94 *************************************************************************
3142:20 D9 32   95          JSR  RETURN
                96 *************************************************************************
3145:20 F5 31   97          JSR  JOININ     PUT INSTRUCTION FOR FIRST JOINER AT TOP OF SCREEN
                98 *************************************************************************
3148:           99 ;TYPE AND FLASH JOINER
3148:AD BE 30  100          LDA  VBKUP
314B:20 92 33  101          JSR  STFLNL
314E:AD 66 34  102          LDA  EXAJ1H
3151:8D 91 33  103          STA  TMPMSH     SET UP FOR DISPLAY AND FLASH ROUTINE
3154:AD 67 34  104          LDA  EXAJ1L
3157:8D 90 33  105          STA  TMPMSL
315A:20 59 32  106          JSR  TFJOIN     TYPE AND FLASH THE JOINER
               107 *************************************************************************
315D:20 D9 32  108          JSR  RETURN
               109 *************************************************************************
3160:20 2D 32  110          JSR  INS35      PUT THIRD INSTRUCTION AT TOP OF SCREEN
               111 *************************************************************************
3163:AD C1 30  112          LDA  LESSON
3166:C9 03     113          CMP  #3         LINE FOR RETAINING ARTICLES
3168:D0 09     114          BNE  SAVNON
316A:A2 39     115          LDX  #<IN3P4
316C:A0 6C     116          LDY  #>IN3P4
316E:A9 02     117          LDA  #2
3170:20 FB 1C  118          JSR  DISPWT
3173:A9 00     119 SAVNON   LDA  #0
3175:20 92 33  120          JSR  STFLNL     FLASH ARROW AT INSTRUCTION
               121 *************************************************************************
3178:          122 ; FLASH REPEATED SECTION OF SENTENCES.
3178:20 71 32  123          JSR  FLREP
               124 *************************************************************************
317B:          125 ;TYPE OUT REMAINDER OF SENTENCE
317B:AD BE 30  126          LDA  VBKUP
317E:20 92 33  127          JSR  STFLNL
3181:20 31 33  128          JSR  LOADVH     SET POINTERS TO LAST POSITION DISPLAYED IN COMBINED SENTENCES
```

```
3184:AD BA 30  129          LDA  DELAYC    SET DELAY
3187:8D BB 30  130          STA  DELAY
318A:AE 6A 34  131          LDX  EXAD2H
318D:AC 6B 34  132          LDY  EXAD2L
3190:A9 02     133          LDA  #2        2 SECOND DELAY
3192:20 FB 1C  134          JSR  DISPWT
3195:20 26 33  135          JSR  SAVEVH
               136 *******************************************************************************
3198:20 94 33  137          JSR  STFLN1    FLASH ARROW AT LINE
               138 *******************************************************************************
319B:20 D9 32  139          JSR  RETURN
               140 *******************************************************************************
319E:          141 ;EXIT ON A 2 SENTENCE EXAMPLE
319E:AD C1 30  142          LDA  LESSON
31A1:C9 04     143          CMP  #4
31A3:F0 03     144          BEQ  SENT3
31A5:4C F4 31  145          JMP  EXDONE
31A8:EE C6 30  146 SENT3    INC  INSFLG
31AB:20 F5 31  147          JSR  JOININ
31AE:AD BE 30  148          LDA  VBKUP
31B1:20 92 33  149          JSR  STFLNL
31B4:AD 6C 34  150          LDA  EXAJ2H
31B7:8D 91 33  151          STA  TMPMSH    SET UP FOR DISPLAY AND FLASH ROUTINE
31BA:AD 6D 34  152          LDA  EXAJ2L
31BD:8D 90 33  153          STA  TMPMSL
31C0:20 59 32  154          JSR  TFJOIN    TYPE AND FLASH THE JOINER
31C3:20 D9 32  155          JSR  RETURN
31C6:EE C6 30  156          INC  INSFLG
31C9:20 2D 32  157          JSR  INS35
31CC:A9 00     158          LDA  #0
31CE:20 92 33  159          JSR  STFLNL
31D1:20 71 32  160          JSR  FLREP
31D4:AD BE 30  161          LDA  VBKUP
31D7:20 92 33  162          JSR  STFLNL
31DA:20 31 33  163          JSR  LOADVH
31DD:AD BA 30  164          LDA  DELAYC
31E0:8D BB 30  165          STA  DELAY
31E3:AE 6E 34  166          LDX  EXAD3H
31E6:AC 6F 34  167          LDY  EXAD3L
31E9:A9 02     168          LDA  #2
31EB:20 FB 1C  169          JSR  DISPWT
31EE:20 94 33  170          JSR  STFLN1
31F1:20 D9 32  171          JSR  RETURN
               172 *******************************************************************************
31F4:60        173 EXDONE   RTS            EXIT FROM EXAMPLE ROUTINE
               174 *******************************************************************************
31F5:          175 ;DISPLAY JOINER INSTRUCTION
31F5:20 94 33  176 JOININ   JSR  STFLN1
31F8:A0 F6     177          LDY  #>IN2P1   LOW BYTE OF MESSAGE ADDRESS
31FA:A2 38     178          LDX  #<IN2P1   HI BYTE FOR FIRST PARTOF INSTRUCTION
31FC:A9 00     179          LDA  #0
31FE:20 FB 1C  180          JSR  DISPWT
3201:          181 ;
3201:AD C1 30  182          LDA  LESSON    SKIP IF NOT 3 SENTENCE EXAMPLE ITEM
3204:C9 04     183          CMP  #4
3206:D0 17     184          BNE  DIN3
3208:AD C6 30  185          LDA  INSFLG    CHECK FLAG FOR WHICH WORD TO INSERT
320B:D0 06     186          BNE  SECOND
320D:A0 04     187          LDY  #>IN2P2F  LOW BYTE OF MESSAGE
320F:A2 39     188          LDX  #<IN2P2F  HI BYTE OF MESSAGE
3211:D0 04     189          BNE  DIN2      ALWAYS BRANCH
3213:A0 08     190 SECOND   LDY  #>IN2P2S  POINT TO "THIRD"
3215:A2 39     191          LDX  #<IN2P2S
```

```
3215:A2 39      191         LDX  #<IN2P2S
3217:A9 00      192 DIN2    LDA  #0
3219:8D C6 30   193         STA  INSFLG    RESTORE FLAG
321C:20 FB 1C   194         JSR  DISPWT    DISPLAY "FIRST" OR "SECOND"
321F:A2 39      195 DIN3    LDX  #<IN2P3
3221:A0 13      196         LDY  #>IN2P3
3223:A9 02      197         LDA  #2        2 SECOND DELAY
3225:20 FB 1C   198         JSR  DISPWT    DISPLAY PART 3 AND RETURN TO CALLER
3228:A9 00      199         LDA  #0
322A:4C 92 33   200         JMP  STFLNL
                201 *************************************************************
322D:           202 ;DISPLAY THRID OR FIFTH INSTRUCTION
322D:20 94 33   203 INS35   JSR  STFLN1
3230:A2 39      204         LDX  #<IN3P1   SET UP FOR PART 1
3232:A0 2B      205         LDY  #>IN3P1
3234:A9 00      206         LDA  #0
3236:20 FB 1C   207         JSR  DISPWT    DISPLAY PART 1 OF THIRD OR FIFTH INSTRUCTION
3239:           208 ;
3239:AD C6 30   209         LDA  INSFLG    DETERMINE WHICH SECOND PART TO DISPLAY
323C:D0 06      210         BNE  THIRD
323E:A0 0B      211         LDY  #>IN2P2S  USE WORD FROM OTHER MESSAGE
3240:A2 39      212         LDX  #<IN2P2S
3242:D0 04      213         BNE  DINM
3244:A0 3A      214 THIRD   LDY  #>IN3P2
3246:A2 39      215         LDX  #<IN3P2
3248:A9 00      216 DINM    LDA  #0        MIDDLE PART OF INSTRUCTION
324A:8D C6 30   217         STA  INSFLG
324D:20 FB 1C   218         JSR  DISPWT
3250:           219 ;
3250:A2 39      220         LDX  #<IN3P3
3252:A0 41      221         LDY  #>IN3P3
3254:A9 02      222         LDA  #2        2 SECOND DELAY
3256:4C FB 1C   223         JMP  DISPWT    DISPLAY 3RD PART
                224 *************************************************************
3259:           225 ;TYPE AND FLASH JOINER
3259:20 31 33   226 TFJOIN  JSR  LOADVH    POINT TO WHERE LEFT ON IN COMBINED SENTENCES
325C:AD BA 30   227         LDA  DELAYC    SET DELAY
325F:8D BB 30   228         STA  DELAY
3262:AD BF 30   229         LDA  FLASHC    SET NUMBER OF TIME TO FLASH
3265:8D C0 30   230         STA  FLASH
3268:20 C5 33   231         JSR  FLSHM     DISPLAY AND FLASH
326B:20 26 33   232         JSR  SAVEVH    SAVE LAST POSITION DISPLAYED
326E:4C 94 33   233         JMP  STFLN1
                234 *************************************************************
3271:           235 ; FLASH REPEATED SECTION OF SENTENCES.
3271:A9 05      236 FLREP   LDA  #5
3273:8D C0 30   237         STA  FLASH
3276:A9 0B      238         LDA  #11
3278:85 25      239         STA  VC
327A:20 CE 32   240         JSR  DISREP
327D:A5 24      241         LDA  HC
327F:85 21      242         STA  RW
3281:A5 25      243 BACK    LDA  VC
3283:85 22      244         STA  TW
3285:85 23      245         STA  BW
3287:20 8C 1F   246         JSR  CLRWIN
328A:E6 22      247         INC  TW
328C:E6 23      248         INC  BW
328E:20 8C 1F   249         JSR  CLRWIN
3291:AD C1 30   250         LDA  LESSON
3294:C9 04      251         CMP  #4
3296:D0 07      252         BNE  NO3
3298:E6 22      253         INC  TW
329A:E6 23      254         INC  BW
```

```
329C:20 8C 1F  255          JSR  CLRWIN
329F:20 40 33  256 NO3      JSR  DELY
32A2:A9 0B     257          LDA  #11
32A4:85 25     258          STA  VC
32A6:85 22     259          STA  TW
32A8:20 CE 32  260          JSR  DISREP
32AB:20 C7 32  261          JSR  DISREO
32AE:AD C1 30  262          LDA  LESSON
32B1:C9 04     263          CMP  #4
32B3:D0 03     264          BNE  NO03
32B5:20 C7 32  265          JSR  DISREO
32B8:20 40 33  266 NO03     JSR  DELY
32BB:A5 22     267          LDA  TW
32BD:85 25     268          STA  VC
32BF:CE C0 30  269          DEC  FLASH
32C2:D0 BD     270          BNE  BACK
32C4:4C 7C 33  271          JMP  FULSCR
32C7:          272 ;
32C7:AD C7 30  273 DISREO   LDA  LE
32CA:85 24     274          STA  HC
32CC:E6 25     275          INC  VC
32CE:AE 68 34  276 DISREP   LDX  EXARH      DISPLAY REPEATED PART
32D1:AC 69 34  277          LDY  EXARL
32D4:A9 00     278          LDA  #0
32D6:4C FB 1C  279          JMP  DISPWT
               280 ****************************************************************************
32D9:          281 ;
32D9:          282          LST  ON
32D9:          283          CHN  SUBS
32D9:            1 ; LST OFF
```

```
32D9:              3 *----SUBS----
32D9:              4 *
32D9:              5 * 1. PUT RETURN MESSAGES AT BOTTOM OF SCREEN
32D9:              6 * 2. WAIT UP TO 15 SECONDS FOR RETURN
32D9:              7 * 3. CLEAR BOTTOM OF SCREEN
32D9:              8 * 4. CLEAR TOP 4 LINES OF SCREEN
32D9:              9 * 5. RESTORE DISPLAY WINDOW TO FULL SCREEN
32D9:             10 * 6. UPON EXIT
32D9:             11 *    A. DELAY IS 0
32D9:             12 *    B. HC = 0
32D9:             13 *    C. VC = 0
32D9:             14 *
32D9:             15 RETURN  EQU  *         PUT RETURN MESSAGE AT
32D9:A9 17        16         LDA  #23       BOTTOM OF SCREEN
32DB:85 25        17         STA  VC
32DD:A5 20        18         LDA  LW
32DF:85 24        19         STA  HC
32E1:8D BC 30     20         STA  BKUP
32E4:8D BB 30     21         STA  DELAY
32E7:8D 10 C0     22         STA  $C010     STROBE
32EA:A2 35        23         LDX  #<RTNM
32EC:A0 DF        24         LDY  #>RTNM
32EE:A9 00        25         LDA  #0
32F0:             26 *
32F0:20 FB 1C     27         JSR  DISPWT    DISPLAY RETURN MESSAGES
32F3:             28 *
32F3:20 1E 1B     29         JSR  WAIT15    WAIT 15 SECONDS FOR CARRIAGE RETURN
32F6:             30 *
32F6:20 FC 32     31         JSR  CLRLST    CLEAR RETURN MESSAGE
32F9:             32 *
32F9:4C 0E 33     33         JMP  CLRTOP    CLEAR TOP OF SCREEN AND RETURN
32FC:             34 *
32FC:             35 *
32FC:AD BC 30     36 CLRLST  LDA  BKUP      CLEAR LAST
32FF:85 20        37         STA  LW        MESSAGE
3301:A5 24        38         LDA  HC
3303:85 21        39         STA  RW
3305:A5 25        40         LDA  VC
3307:85 22        41         STA  TW
3309:85 23        42         STA  BW
330B:             43 *
330B:4C 8C 1F     44         JMP  CLRWIN    CLEAR WINDOW AND RETURN
330E:             45 *
330E:             46 *
330E:             47 CLRTOP  EQU  *
330E:A9 01        48         LDA  #1        CLEAR TOP 4 LINES OF SCREEN
3310:85 20        49         STA  LW
3312:A9 00        50         LDA  #0
3314:85 22        51         STA  TW
3316:A9 27        52         LDA  #39
3318:85 21        53         STA  RW
331A:A9 06        54         LDA  #6
331C:85 23        55         STA  BW
331E:20 8C 1F     56         JSR  CLRWIN
3321:A9 17        57         LDA  #23       RESTORE FULL-SCREEN
3323:85 23        58         STA  BW
3325:60           59         RTS
```

[redacted]

```
3326:              61 !SAVE POINTER WHERE LAST DISPLAY STOPPED
3326:              62 !
3326:              63 !LOAD POINTER TO WHERE DISPLAY HAD STOPPED
3326:              64 !
3326:A5 24         65 SAVEVH  LDA  HC          SAVE HORIZONTAL AND
3328:8D BD 30      66         STA  HBKUP       AND VERTICLE
332B:A5 25         67         LDA  VC          POSITIONSFOR NEXT PART
332D:8D BE 30      68         STA  VBKUP       OF COMBINED SENTENCES
3330:60            69         RTS
3331:              70 !
3331:AD BE 30      71 LOADVH  LDA  VBKUP
3334:85 25         72         STA  VC          PUT POINTS TO END OF WHAT HAS
3336:AD BD 30      73         LDA  HBKUP       BEEN DISPLAYED SO FAR
3339:85 24         74         STA  HC
333B:8D BC 30      75         STA  BKUP        SAVE HORIZONTAL POSITION
333E:60            76         RTS
                   77 ***********************************************************************
333F:              78 : DELAYS
333F:              79 !
333F:00            80 DELAYD  DFB  0
3340:A9 64         81 DELY    LDA  #100        STANDARD DELAY FOR FLASHING
3342:8D BB 30      82         STA  DELAY
3345:EE BB 30      83 DELY1   INC  DELAY       SO CAN CHECK FOR ZERO AFTER DECREMENTING
3348:A9 00         84         LDA  #0          SET LOW BYTE OF COUNTER
334A:8D 3F 33      85         STA  DELAYD
334D:F0 17         86         BEQ  DELY2
334F:AD 00 C0      87 DLOOP   LDA  $C000       LOOK AT KEYBOARD PORT
3352:C9 8D         88         CMP  #$8D        CHECK FOR RETURN
3354:D0 0B         89         BNE  DECDEL
3356:A9 01         90         LDA  #1
3358:8D 3F 33      91         STA  DELAYD
335B:8D C0 30      92         STA  FLASH
335E:8D BB 30      93         STA  DELAY
3361:CE 3F 33      94 DECDEL  DEC  DELAYD      COUNT DOWN LOW BYTE
3364:D0 E9         95         BNE  DLOOP
3366:CE BB 30      96 DELY2   DEC  DELAY       COUNT DOWN HIGH BYTE
3369:D0 E4         97         BNE  DLOOP
336B:60            98         RTS
                   99 ********************
336C:             100 !PATCH FOR MESSAGE DISPLAY
336C:48           101 DISPWP  PHA               FROM $1DC4
336D:AD BB 30     102         LDA  DELAY
3370:48           103         PHA               SAVE DELAY ON STACK
3371:20 45 33     104 CDELAY  JSR  DELY1
3374:68           105         PLA
3375:8D BB 30     106         STA  DELAY       RESTORE DELAY
3378:68           107         PLA
3379:4C 21 1F     108         JMP  HIROUT      ($1F21)
                  109 ********************************
337C:             110 ! SET UP FOR FULL SCREEN DISPLAY WINDOW LESS COLUMN 1
337C:             111 !
337C:A9 00        112 FULSCR  LDA  #0
337E:85 22        113         STA  TW
3380:AD C7 30     114         LDA  LE
3383:85 20        115         STA  LW
3385:85 24        116         STA  HC
3387:A9 27        117         LDA  #39
3389:85 21        118         STA  RW
338B:A9 17        119         LDA  #23
338D:85 23        120         STA  BW
338F:60           121         RTS
```

```
338D:85 23      120          STA  BW
338F:60         121          RTS

3390:           123 * FLASH STAR OR MESSAGE
3390:           124 *
3390:0D         125 TMPMSL   DFB  $D
3391:0B         126 TMPMSH   DFB  $B
3392:           127 *
3392:85 25      128 STFLNL   STA  VC        FLASH WILL OCCURE ONLINE VC SPECIFIED BY ACCUMULATOR
3394:A9 00      129 STFLN1   LDA  #0        SET CURSOR TO FAR
3396:85 20      130          STA  LW        RIGHT OF
3398:85 24      131          STA  HC        LINE
339A:           132 *
339A:A9 05      133 STARFL   LDA  #5        NUMBER OF FLASHES
339C:8D C0 30   134          STA  FLASH     FOR STAR IS FIXED
339F:A5 24      135          LDA  HC        SET BACKUP POINTER
33A1:8D BC 30   136          STA  BKUP      TO CURRENT HORIZONTAL POSITION
33A4:A9 36      137          LDA  #<STARM   HAVE TEMPORARY MESSAGE
33A6:8D 91 33   138          STA  TMPMSH    POINTERS OINT TO
33A9:A9 01      139          LDA  #>STARM   STAR MESSAGES
33AB:8D 90 33   140          STA  TMPMSL
33AE:           141 *
33AE:20 C5 33   142          JSR  FLSHM     FLASH THE STAR
33B1:           143 *
33B1:20 8C 1F   144          JSR  CLRWIN    CLEAR THE STAR
33B4:           145 *
33B4:4C 7C 33   146          JMP  FULSCR    RESTORE FULL SCREEN
33B7:           147 *
33B7:           148 *
33B7:20 40 33   149 FLSH1    JSR  DELY
33BA:20 8C 1F   150          JSR  CLRWIN    CLEAR EDIT WINDOW WHICH
33BD:           151 *                       MOVES HC BACK TO BKUP
33BD:           152 *
33BD:20 40 33   153          JSR  DELY
33C0:           154 *
33C0:A9 00      155          LDA  #0        NO DELAY
33C2:8D BB 30   156          STA  DELAY     AFTER FIRST TIME
33C5:           157 *
33C5:AE 91 33   158 FLSHM    LDX  TMPMSH    SET UP TO PRINT
33C8:AC 90 33   159          LDY  TMPMSL    MESSAGE
33CB:A9 00      160          LDA  #0
33CD:           161 *
33CD:20 FB 1C   162          JSR  DISPWT
33D0:           163 *
33D0:AD BC 30   164          LDA  BKUP      SET UP EDIT
33D3:85 20      165          STA  LW        WINDOW TO CLEAR
33D5:A5 24      166          LDA  HC        LAST MESSAGE PRINTED
33D7:85 21      167          STA  RW
33D9:A5 25      168          LDA  VC
33DB:85 22      169          STA  TW
33DD:85 23      170          STA  BW
33DF:           171 *
33DF:CE C0 30   172          DEC  FLASH     COUNT DOWN FLASHES
33E2:D0 D3      173          BNE  FLSH1
33E4:           174 *
33E4:A9 00      175          LDA  #0
33E6:8D 10 C0   176          STA  $C010     RESET KEYBOARD STROBE
33E9:           177 *
33E9:60         178          RTS
```

```
33EA:                180 ;
33EA:                181 ;
33EA:                182 ;FLASH CORRECT SENTENCE
33EA:A9 03           183 FLHCOR  LDA  #3
33EC:8D C0 30        184         STA  FLASH
33EF:A5 22           185         LDA  TW
33F1:48              186         PHA
33F2:A5 25           187         LDA  VC
33F4:85 22           188         STA  TW
33F6:AD C3 12        189 FLHSEN  LDA  $12C3
33F9:AE C2 12        190         LDX  $12C2
33FC:AC C1 12        191         LDY  $12C1
33FF:20 0B 1D        192         JSR  $1D0B      DISPLA
Y STRING
3402:                193 ;
3402:20 40 33        194         JSR  DELY
3405:                195 ;
3405:20 8C 1F        196         JSR  CLRWIN
3408:                197 ;
3408:20 40 33        198         JSR  DELY
340B:                199 ;
340B:CE C0 30        200         DEC  FLASH
340E:D0 E6           201         BNE  FLHSEN
3410:                202 ;
3410:68              203         PLA
3411:85 22           204         STA  TW
3413:AD C3 12        205         LDA  $12C3
3416:60              206         RTS
3417:                207 ;
3417:                208 ;
3417:                209 ;CLEAR DISPLAY WINDOW BEFORE PRINTING TIMEOUT MESSAGE TO PREVENT SCROLLING
3417:20 8C 1F        210 NOSCRL  JSR  CLRWIN
341A:A2 0D           211         LDX  #$0D
341C:A0 5D           212         LDY  #$5D
341E:60              213         RTS
341F:                214 ;
341F:20 8C 1F        215 NOSCR2  JSR  CLRWIN
3422:A2 0D           216         LDX  #$0D
3424:A0 E8           217         LDY  #$E8
3426:60              218         RTS
3427:                219 ;
3427:                220 ;
3427:                221 ;TERMINALTION MESSAGES
3427:48              222 TERM    PHA
3428:20 7E 1F        223         JSR  CLRSCR
342B:A9 05           224         LDA  #5
342D:85 25           225         STA  VC
342F:68              226         PLA
3430:F0 0A           227         BEQ  OK
3432:C9 02           228         CMP  #2
3434:F0 06           229         BEQ  OK
3436:A0 19           230         LDY  #>ERREND
3438:A2 3B           231         LDX  #<ERREND
343A:D0 04           232         BNE  SHOW
343C:A2 3B           233 OK      LDX  #<OKEND
343E:A0 5F           234         LDY  #>OKEND
3440:A9 0A           235 SHOW    LDA  #10
3442:20 FB 1C        236         JSR  DISPWT
3445:A9 03           237         LDA  #3
3447:85 44           238         STA  $44
3449:60              239         RTS
344A:                240 ;
344A:                241         LST  ON


344A:                242         CHN  LESEX
344A:                  1 ;LST OFF
```

```
344A:               3 ;----LESEX-----
                    4 ***********************************************************************
344A:               5 ;DETERMINE LESSON AND EXAMPLE WITHIN LESSON--SET POINTERS FOR EXAMPLE
                    6 ***********************************************************************
344A:               7 ;LESSON/EXAMPLE TABLE
344A:               8 LETAB   EQU  *
344A:03 36          9         DW   L1E0      THIS TABLE POINTS
344C:03 36         10         DW   L1E1      TO THE START OF EACH OF
344E:5E 36         11         DW   L1E2      THE EXAMPLS.
3450:D5 36         12         DW   L2E0      THERE ARE 3 EXAMPLES FOR
3452:D5 36         13         DW   L2E1      EACH OF 4 LESSONS
3454:D5 36         14         DW   L2E2
3456:6D 37         15         DW   L3E0
3458:6D 37         16         DW   L3E1
345A:6D 37         17         DW   L3E2
345C:00 38         18         DW   L4E0
345E:00 38         19         DW   L4E1
3460:00 38         20         DW   L4E2
                   21 ***********************************************************************
3462:              22 EXTAB   EQU  *
3462:              23 ;
3462:36            24 EXA1H   DFB  <EXA1      THIS TABLE RESERVES SPACE
3463:03            25 EXA1L   DFB  >EXA1      TO POINT AT THE MESSAGES
3464:              26 ;   WITHIN AN EXAMPLE
3464:36            27 EXAD1H  DFB  <EXA1D1    THE TABLE IS INITIALIZED TO POINT
3465:32            28 EXAD1L  DFB  >EXA1D1    AT LESSON 1 EXAMPLE 0
3466:              29 ;
3466:36            30 EXAJ1H  DFB  <EXA1DJ
3467:44            31 EXAJ1L  DFB  >EXA1DJ
3468:              32 ;
3468:36            33 EXARH   DFB  <EXA1R
3469:49            34 EXARL   DFB  >EXA1R
346A:              35 ;
346A:36            36 EXAD2H  DFB  <EXA1D2
346B:4D            37 EXAD2L  DFB  >EXA1D2
346C:              38 ;
346C:38            39 EXAJ2H  DFB  <EXA4DJ
346D:8A            40 EXAJ2L  DFB  >EXA4DJ
346E:              41 ;
346E:38            42 EXAD3H  DFB  <EXA4D3
346F:91            43 EXAD3L  DFB  >EXA4D3
                   44 ***********************************************************************
3470:              45 LESEXI  EQU  *           ENTRY POINT FOR LESSON AND EXAMPLE SST UP
3470:AD 7C 10      46         LDA  $107C       PART OF LESSON A-D
3473:29 07         47         AND  #7
3475:8D C1 30      48         STA  LESSON
3478:8D BB 30      49         STA  DELAY       USE DELAY FOR TEMP STORAGE
                                                SET X FOR OFFSET INTO WHICH EXAMPLE TO BE USED TABLE
347B:AA            50         TAX
347C:DE C1 30      51         DEC  LESSON,X    MOVE TO NEXT EXAMPLE
347F:10 05         52         BPL  AROUND
3481:A9 02         53         LDA  #2
3483:9D C1 30      54         STA  LESSON,X    PUT BACK TO EXAMPLE 2 IF GO PAST 0
3486:CE BB 30      55 AROUND  DEC  DELAY       SUBTRACT ONE
3489:18            56         CLC
348A:AD BB 30      57         LDA  DELAY
348D:6D BB 30      58         ADC  DELAY
3490:6D BB 30      59         ADC  DELAY       TIMES 3
3493:7D C1 30      60         ADC  LESSON,X    ADD OFSET FOR WHICH EXAMPLE
3496:0A            61         ASL  A           TIMES 2
3497:AA            62         TAX
3498:BD 4A 34      63         LDA  LETAB,X     LOOK IN TABLES AND
349B:85 50         64         STA  $50         TRANSFER ADDRESS TO
349D:E8            65         INX               PAGE ZERO
```

```
3497:AA         62          TAX
3498:BD 4A 34   63          LDA  LETAB,X   LOOK IN TABLES AND
349B:85 50      64          STA  $50       TRANSFER ADDRESS TO
349D:E8         65          INX             PAGE ZERO


349E:BD 4A 34   66          LDA  LETAB,X
34A1:85 51      67          STA  $51
34A3:A0 00      68          LDY  #0        INITIALIZE Y
34A5:A2 00      69          LDX  #0        AND X
34A7:A5 51      70 TEXLP    LDA  $51       TRANSFER MESSAGE ADDRESS
34A9:9D 62 34   71          STA  EXTAB,X   TO EXAMPLE TABLE
34AC:E8         72          INX
34AD:A5 50      73          LDA  $50
34AF:9D 62 34   74          STA  EXTAB,X
34B2:B1 50      75          LDA  ($50),Y   ADD LENGTH OF MESSAGES PLUS 1
34B4:38         76          SEC             TO CURRENT MESSAGE
34B5:65 50      77          ADC  $50       ADDRESS TO GET
34B7:85 50      78          STA  $50       ADDRESS OF NEXT MESSAGE
34B9:90 02      79          BCC  SKIP
34BB:E6 51      80          INC  $51
34BD:E8         81 SKIP     INX
34BE:E0 0E      82          CPX  #14
34C0:D0 E5      83          BNE  TEXLP     FOR 7 MESSAGES
34C2:60         84          RTS
                85 **************************************************************************************
```

```
34C3:              !PATCH TO EXIT FROM PRACTICE
34C3:              !
34C3:00            COUNTS  DFB  0
34C4:00            COUNTF  DFB  0
34C5:00            COUNTX  DFB  0
34C6:              !
34C6:AD C3 34      SCPTCH  LDA  COUNTS      QUIT IF ERROR COUNT HAS MAXED
34C9:C9 02                 CMP  #2          ELSE DO PATCH AND RETURN
34CB:F0 06                 BEQ  QUITP
34CD:AD CB 15              LDA  $15CB
34D0:4C AC 29              JMP  $29AC
34D3:              !
34D3:A9 00         QUITP   LDA  #0
34D5:8D C3 34              STA  COUNTS
34D8:18                    CLC
34D9:A9 FF                 LDA  #$FF
34DB:60                    RTS
34DC:              !
34DC:20 5F 20      SCPTC2  JSR  WPEDIT      PERFORM INPUT THROUGH EDIT ROUTINE
34DF:A5 24                 LDA  HC          CHECK CURSOR POSITION AFTER EDIT
34E1:F0 05                 BEQ  RET
34E3:A2 FF         SCPTC3  LDX  #$FF        RESET COUNT IF CURSOR NOT AT FAR LEFT
34E5:8E C3 34              STX  COUNTS
34E8:EE C3 34      RET     INC  COUNTS
34EB:60                    RTS
34EC:              !
34EC:              !
34EC:              ! RESET COUNT WHEN SPELLING CORRECTION MADE
34EC:              !
34EC:20 1F 1D      SPLCNT  JSR  DISPLA
34EF:4C E3 34              JMP  SCPTC3
34F2:              !
34F2:              !
34F2:              ! ADD LINE AFTER 'VERY GOOD'
34F2:E6 25         ADDSPC  INC  VC
34F4:4C 7F 23              JMP  GETCUR
34F7:              !
34F7:              !
34F7:              :BELL ONLY WHEN SAME CURSOR POSITION
34F7:FF            LASTHC  DFB  255
34F8:A5 24         FIXBEL  LDA  HC
34FA:CD F7 34              CMP  LASTHC
34FD:8D F7 34              STA  LASTHC
3500:F0 01                 BEQ  BEEPIT
3502:60                    RTS
3503:4C DD FB      BEEPIT  JMP  BELOUT
3506:              !
3506:                      LST  ON
3506:                      CHN  MESSAGES
3506:              :LST OFF
```

```
3506:                3 ;-----MESSAGES-----
3506:                4 ;
3506:                5 LOGONM  EQU  *
3506:                6         MSB  OFF        SET MOST SIGNIGICAT BIT OFF
3506:95              7         DFB  149
3507:48 65 6C        8         ASC  "Hello.    I am going to teach you how to "
350A:6C 6F 2E
350D:20 20 49
3510:20 61 6D
3513:20 67 6F
3516:69 6E 67
3519:20 74 6F
351C:20 74 65
351F:61 63 68
3522:20 79 6F
3525:75 20 68
3528:6F 77 20
352B:74 6F 20
352E:63 6F 6D        9         ASC  "combine two or more sentences into one "
3531:62 69 6E
3534:65 20 74
3537:77 6F 20
353A:6F 72 20
353D:6D 6F 72
3540:65 20 73
3543:65 6E 74
3546:65 6E 63
3549:65 73 20
354C:69 6E 74
354F:6F 20 6F
3552:6E 65 20
3555:67 6F 6F       10         ASC  "good     sentence.++"
3558:64 20 73
355B:65 6E 74
355E:65 6E 63
3561:65 2E 2B
3564:2B
3565:50 6C 65       11         ASC  "Please   type your first name.  Then push "
3568:61 73 65
356B:20 74 79
356E:70 65 20
3571:79 6F 75
3574:72 20 66
3577:69 72 73
357A:74 20 6E
357D:61 6D 65
3580:2E 20 20
3583:54 68 65
3586:6E 20 70
3589:75 73 68
358C:20
358D:74 68 65       12         ASC  "the      RETURN key.+"
3590:20 52 45
3593:54 55 52
3596:4E 20 6B
3599:65 79 2E
359C:2B
359D:2C             13 INTRO1  DFB  44
359E:52 65 61       14         ASC  "Read     the sentences below.+
35A1:64 20 74
35A4:68 65 20
35A7:73 65 6E
35AA:74 65 6E
```

```
35AD:63 65 73
35B0:20 62 65
35B3:6C 6F 77
35B6:2E 2B
35B8:4C 6F 6F   15          ASC  "Look     at the joiner
35BB:6B 20 61
35BE:74 20 74
35C1:68 65 20
35C4:6A 6F 69
35C7:6E 65 72
35CA:20
35CB:01         16 INTRO2   DFB  1
35CC:73         17          ASC  "s"
35CD:11 60      18 INTRO3   DFB  17,96
35CF:69 6E 20   19          ASC  "in       parentheses.+
35D2:70 61 72
35D5:65 6E 74
35D8:68 65 73
35DB:65 73 2E
35DE:2B
35DF:20         20 RTNM     DFB  32
35E0:50 72 65   21          ASC  "Press    RETURN when you are ready.
35E3:73 73 20
35E6:52 45 54
35E9:55 52 4E
35EC:20 77 68
35EF:65 6E 20
35F2:79 6F 75
35F5:20 61 72
35F8:65 20 72
35FB:65 61 64
35FE:79 2E 20
3601:01         22 STARM    DFB  1
3602:2A         23          ASC  "*
3603:           24 L1E1     EQU  *
3603:           25 L1E0     EQU  *
3603:2E         26 EXA1     DFB  46
3604:41 6E 61   27          ASC  "Ana      hit the ball.+
3607:20 68 69
360A:74 20 74
360D:68 65 20
3610:62 61 6C
3613:6C 2E 2B
3616:41 6E 61   28          ASC  "Ana      sent it soaring.  (and)+
3619:20 73 65
361C:6E 74 20
361F:69 74 20
3622:73 6F 61
3625:72 69 6E
3628:67 2E 20
362B:20 28 61
362E:6E 64 29
3631:2B
3632:11         29 EXA1D1   DFB  17
3633:41 6E 61   30          ASC  "Ana      hit the ball "
3636:20 68 69
3639:74 20 74
363C:68 65 20
363F:62 61 6C
3642:6C 20
3644:04         31 EXA1DJ   DFB  4
3645:61 6E 64   32          ASC  "and      "
3648:20
```

```
3648:20


3649:03           33 EXA1R    DFB  3
364A:41 6E 61     34          ASC  "Ana
364D:10           35 EXA1D2   DFB  16
364E:73 65 6E     36          ASC  "sent      it soaring."
3651:74 20 69
3654:74 20 73
3657:6F 61 72
365A:69 6E 67
365D:2E
365E:             37 L1E2     EQU  *
365E:3C           38          DFB  60
365F:4D 61 72     39          ASC  "Maria    reached with her glove.+Maria caught the ball.  (and)+"
3662:69 61 20
3665:72 65 61
3668:63 68 65
366B:64 20 77
366E:69 74 68
3671:20 68 65
3674:72 20 67
3677:6C 6F 76
367A:65 2E 2B
367D:4D 61 72
3680:69 61 20
3683:63 61 75
3686:67 68 74
3689:20 74 68
368C:65 20 62
368F:61 6C 6C
3692:2E 20 20
3695:28 61 6E
3698:64 29 2B
369B:1D           40          DFB  29
369C:4D 61 72     41          ASC  "Maria    reached with her glove."
369F:69 61 20
36A2:72 65 61
36A5:63 68 65
36A8:64 20 77
36AB:69 74 68
36AE:20 68 65
36B1:72 20 67
36B4:6C 6F 76
36B7:65 20
36B9:04           42          DFB  4
36BA:41 6E 64     43          ASC  "and       "
36BD:20
36BE:05           44          DFB  5
36BF:4D 61 72     45          ASC  "Maria"
36C2:69 61
36C4:10           46          DFB  16
36C5:63 61 75     47          ASC  "caught   the ball."
36C8:67 68 74
36CB:20 74 68
36CE:65 20 62
36D1:61 6C 6C
36D4:2E
36D5:             48 L2E2     EQU  *
36D5:             49 L2E1     EQU  *
36D5:             50 L2E0     EQU  *
36D5:4C           51          DFB  76
36D6:54 68 65     52          ASC  "The      surface of the wall was smooth.+The surface of the wall was cool. (and)+"
36D9:20 73 75
36DC:72 66 61
36DF:63 65 20
```

```
36E2:6F 66 20
36E5:74 68 65
36E8:20 77 61
36EB:6C 6C 20
36EE:77 61 73
36F1:20 73 6D
36F4:6F 6F 74
36F7:68 2E 2B
36FA:54 68 65
36FD:20 73 75
3700:72 66 61
3703:63 65 20
3706:6F 66 20
3709:74 68 65
370C:20 77 61
370F:6C 6C 20
3712:77 61 73
3715:20 63 6F
3718:6F 6C 2E
371B:20 28 61
371E:6E 64 29
3721:2B
3722:23         53         DFB  35
3723:54 68 65   54         ASC  "The       surface of the wall was+smooth "
3726:20 73 75
3729:72 66 61
372C:63 65 20
372F:6F 66 20
3732:74 68 65
3735:20 77 61
3738:6C 6C 20
373B:77 61 73
373E:2B 73 6D
3741:6F 6F 74
3744:68 20
3746:04         55         DFB  4
3747:61 6E 64   56         ASC  "and       "
374A:20
374B:1B         57         DFB  27
374C:54 68 65   58         ASC  "The       surface of the wall was"
374F:20 73 75
3752:72 66 61
3755:63 65 20
3758:6F 66 20
375B:74 68 65
375E:20 77 61
3761:6C 6C 20
3764:77 61 73
3767:05         59         DFB  5
3768:63 6F 6F   60         ASC  "cool."
376B:6C 2E
376D:           61 L3E2    EQU  *
376D:           62 L3E1    EQU  *
376D:           63 L3E0    EQU  *
376D:49         64         DFB  73
376E:47 65 6F   65         ASC  "George    Washington was a general.+George Washington was a President. (and)"
3771:72 67 65
3774:20 57 61
3777:73 68 69
377A:6E 67 74
377D:6F 6E 20
3780:77 61 73
3783:20 61 20
```

```
3783:20 61 20

3786:67 65 6E
3789:65 72 61
378C:6C 2E 28
378F:47 65 6F
3792:72 67 65
3795:20 57 61
3798:73 68 69
379B:6E 67 74
379E:6F 6E 20
37A1:77 61 73
37A4:20 61 20
37A7:50 72 65
37AA:73 69 64
37AD:65 6E 74
37B0:2E 20 20
37B3:61 6E 64
37B6:29
37B7:20           66          DFB  32
37B8:47 65 6F     67          ASC  "George   Washington was a general "
37BB:72 67 65
37BE:20 57 61
37C1:73 68 69
37C4:6E 67 74
37C7:6F 6E 20
37CA:77 61 73
37CD:20 61 20
37D0:67 65 6E
37D3:65 72 61
37D6:6C 20
37D8:04           68          DFB  4
37D9:61 6E 64     69          ASC  "and "
37DC:20
37DD:15           70          DFB  21
37DE:47 65 6F     71          ASC  "George   Washington was"
37E1:72 67 65
37E4:20 57 61
37E7:73 68 69
37EA:6E 67 74
37ED:6F 6E 20
37F0:77 61 73
37F3:0C           72          DFB  12
37F4:61 20 50     73          ASC  "a        President."
37F7:72 65 73
37FA:69 64 65
37FD:6E 74 2E
3800:             74 L4E2     EQU  *
3800:             75 L4E1     EQU  *
3800:             76 L4E0     EQU  *
3800:58           77          DFB  88
3801:4A 75 61     78          ASC  "Juan     leaped into the air.+Juan caught the ball.  (,)+Juan fired to first base.  (, and)+"
3804:6E 20 6C
3807:65 61 70
380A:65 64 20
380D:69 6E 74
3810:6F 20 74
3813:68 65 20
3816:61 69 72
3819:2E 2B 4A
381C:75 61 6E
381F:20 63 61
3822:75 67 68
3825:74 20 74
3828:68 65 20
```

```
382B:62 61 6C
382E:6C 2E 20
3831:20 28 2C
3834:29 2B 4A
3837:75 61 6E
383A:20 66 69
383D:72 65 64
3840:20 74 6F
3843:20 66 69
3846:72 73 74
3849:20 62 61
384C:73 65 2E
384F:20 20 28
3852:2C 20 61
3855:6E 64 29
3858:2B
3859:18          79          DFB  24
385A:4A 75 61    80          ASC  "Juan      leaped into the air"
385D:6E 20 6C
3860:65 61 70
3863:65 64 20
3866:69 6E 74
3869:6F 20 74
386C:68 65 20
386F:61 69 72
3872:01          81          DFB  1
3873:2C          82          ASC  ",
3874:04          83          DFB  4
3875:4A 75 61    84          ASC  "Juan
3878:6E
3879:10 60       85          DFB  16,96
387B:63 61 75    86          ASC  "caught    the+ball"
387E:67 68 74
3881:20 74 68
3884:65 2B 62
3887:61 6C 6C
388A:06          87 EXA4DJ   DFB  6
388B:2C 20 61    88          ASC  ",         and "
388E:6E 64 20
3891:14          89 EXA4D3   DFB  20
3892:66 69 72    90          ASC  "fired     to first base."
3895:65 64 20
3898:74 6F 20
389B:66 69 72
389E:72 74 20
38A1:62 61 73
38A4:65 2E
38A6:4F          91 IN1      DFB  79
38A7:57 68 65    92          ASC  "When      you combine sentences, type the+"
38AA:6E 20 79
38AD:6F 75 20
38B0:63 6F 6D
38B3:62 69 6E
38B6:65 20 73
38B9:65 6E 74
38BC:65 6E 63
38BF:65 73 2C
38C2:20 74 79
38C5:70 65 20
38C8:74 68 65
38CB:2B
38CC:66 69 72    93          ASC  "first     sentence, but leave off the+"
38CF:73 74 20
```

```
38CF:73 74 20


38D2:73 65 6E
38D5:74 65 6E
38D8:63 65 2C
38DB:20 62 75
38DE:74 20 6C
38E1:65 61 76
38E4:65 20 6F
38E7:66 66 20
38EA:74 68 65
38ED:2B
38EE:70 65 72   94          ASC  "period.+"
38F1:69 6F 64
38F4:2E 2B
38F6:0D         95 IN2P1    DFB  13
38F7:4E 65 78   96          ASC  "Next    add the "
38FA:74 20 61
38FD:64 64 20
3900:74 68 65
3903:20
3904:06         97 IN2P2F   DFB  6
3905:66 69 72   98          ASC  "first    "
3908:73 74 20
390B:07         99 IN2P2S   DFB  7
390C:73 65 63  100          ASC  "second   "
390F:6F 6E 64
3912:20
3913:17        101 IN2P3    DFB  23
3914:6A 6F 69  102          ASC  "joiner   in parentheses.+"
3917:6E 65 72
391A:20 69 6E
391D:20 70 61
3920:72 65 6E
3923:74 68 65
3926:73 65 73
3929:2E 2B
392B:0E        103 IN3P1    DFB  14
392C:54 68 65  104          ASC  "Then    type the "
392F:6E 20 74
3932:79 70 65
3935:20 74 68
3938:65 20
393A:06        105 IN3P2    DFB  6
393B:74 68 69  106          ASC  "third    "
393E:72 64 20
3941:2A        107 IN3P3    DFB  42
3942:73 65 6E  108          ASC  "sentence.+"
3945:74 65 6E
3948:63 65 2C
394B:2B
394C:6C 65 61  109          ASC  "leaving  out the repeated words.+"
394F:76 69 6E
3952:67 20 6F
3955:75 74 20
3958:74 68 65
395B:20 72 65
395E:70 65 61
3961:74 65 64
3964:20 77 6F
3967:72 64 73
396A:2E 2B
396C:6C        110 IN3P4    DFB  108
396D:48 6F 77  111          ASC  "However, repeated words like 'the' and 'a' or 'an' sometimes must be left in so the sentence sounds
 better.+"
```

```
3970:65 76 65
3973:72 2C 20
3976:72 65 70
3979:65 61 74
397C:65 64 20
397F:77 6F 72
3982:64 73 20
3985:6C 69 6B
3988:65 20 27
398B:74 68 65
398E:27 20 61
3991:6E 64 20
3994:27 61 27
3997:20 6F 72
399A:20 27 61
399D:6E 27 20
39A0:73 6F 6D
39A3:65 74 69
39A6:6D 65 73
39A9:20 6D 75
39AC:73 74 20
39AF:62 65 20
39B2:6C 65 66
39B5:74 20 69
39B8:6E 20 73
39BB:6F 20 74
39BE:68 65 20
39C1:73 65 6E
39C4:74 65 6E
39C7:63 65 20
39CA:73 6F 75
39CD:6E 64 73
39D0:20 62 65
39D3:74 74 65
39D6:72 2E 2B
39D9:            112 ;
39D9:C2          113 SWRL     DFB  194
39DA:2B 2B 5E    114          ASC  "++^^^^^^^COMBININO SENTENCES++"
39DD:5E 5E 5E
39E0:5E 5E 5E
39E3:43 4F 4D
39E6:42 49 4E
39E9:49 4E 47
39EC:20 53 45
39EF:4E 54 45
39F2:4E 43 45
39F5:53 2B 2B
39F8:5E 5E 5E    115          ASC  "^^^^^^^^^^^^Produced by+"
39FB:5E 5E 5E
39FE:5E 5E 5E
3A01:5E 5E 50
3A04:72 6F 64
3A07:75 63 65
3A0A:64 20 62
3A0D:79 2B
3A0F:5E 5E 5E    116          ASC  "^^^^^^^^^^^^^^^SWRL+"
3A12:5E 5E 5E
3A15:5E 5E 5E
3A18:5E 5E 5E
3A1B:5E 5E 5E
3A1E:53 57 52
3A21:4C 2B
3A23:45 64 75    117          ASC  "Educational Research and Development+"
```

```
3A1E:53 57 52
3A21:4C 2B
3A23:45 64 75  117          ASC  "Educational Research and Development+"


3A26:63 61 74
3A29:69 6F 6E
3A2C:61 6C 20
3A2F:52 65 73
3A32:65 61 72
3A35:63 68 20
3A38:61 6E 64
3A3B:20 44 65
3A3E:76 65 6C
3A41:6F 70 6D
3A44:65 6E 74
3A47:2B
3A48:5E 5E 5E  118          ASC  "^^^^^^^4665 Lampson Avenue+"
3A4B:5E 5E 5E
3A4E:5E 34 36
3A51:36 35 20
3A54:4C 61 6D
3A57:70 73 6F
3A5A:6E 20 41
3A5D:76 65 6E
3A60:75 65 2B
3A63:5E 5E 5E  119          ASC  "^^^^^^Los Alamitos, CA 90720+"
3A66:5E 5E 5E
3A69:4C 6F 73
3A6C:20 41 6C
3A6F:61 6D 69
3A72:74 6F 73
3A75:2C 20 43
3A78:41 20 39
3A7B:30 37 32
3A7E:30 2B
3A80:5E 5E 5E  120          ASC  "^^^^^^^^^^^Copyright 1982++++"
3A83:5E 5E 5E
3A86:5E 5E 5E
3A89:5E 43 6F
3A8C:70 79 72
3A8F:69 67 68
3A92:74 20 31
3A95:39 38 32
3A98:2B 2B 2B
3A9B:2B
3A9C:7B        . 121 SWRL2  DFB  123
3A9D:54 68 69  122          ASC  "This      material was prepared under Contract No. 400-80-0108 with the National Institute of Educat
ion, Department of Education."
3AA0:73 20 6D
3AA3:61 74 65
3AA6:72 69 61
3AA9:6C 20 77
3AAC:61 73 20
3AAF:70 72 65
3AB2:70 61 72
3AB5:65 64 20
3AB8:75 6E 64
3ABB:65 72 20
3ABE:43 6F 6E
3AC1:74 72 61
3AC4:63 74 20
3AC7:4E 6F 2E
3ACA:20 34 30
3ACD:30 2D 38
3AD0:30 2D 30
3AD3:31 30 38
3AD6:20 77 69
```

```
3AD9:74 68 20
3ADC:74 68 65
3ADF:20 4E 61
3AE2:74 69 6F
3AE5:6E 61 6C
3AE8:20 49 6E
3AEB:73 74 69
3AEE:74 75 74
3AF1:65 20 6F
3AF4:66 20 45
3AF7:64 75 63
3AFA:61 74 69
3AFD:6F 6E 2C
3B00:20 44 65
3B03:70 61 72
3B06:74 6D 65
3B09:6E 74 20
3B0C:6F 66 20
3B0F:45 64 75
3B12:63 61 74
3B15:69 6F 6E
3B18:2E
3B19:45         123 ERREND   DFB  69
3B1A:54 68 61   124          ASC  "That     is enoumh for now.+We will work on this aaain later.+Goodbye. "
3B1D:74 20 69
3B20:73 20 65
3B23:6E 6F 75
3B26:67 68 20
3B29:66 6F 72
3B2C:20 6E 6F
3B2F:77 2E 2B
3B32:57 65 20
3B35:77 69 6C
3B38:6C 20 77
3B3B:6F 72 6B
3B3E:20 6F 6E
3B41:20 74 68
3B44:69 73 20
3B47:61 67 61
3B4A:69 6E 20
3B4D:6C 61 74
3B50:65 72 2E
3B53:2B 47 6F
3B56:6F 64 62
3B59:79 65 2C
3B5C:20
3B5D:00         125          DFB  0
3B5E:2E         126          ASC  "."
3B5F:55         127 OKEND    DFB  85
3B60:47 6F 6F   128          ASC  "Good     work "
3B63:64 20 77
3B66:6F 72 6B
3B69:20
3B6A:00         129          DFB  0
3B6B:2E 2B 59   130          ASC  ".+You    have comepleted this lesson.+We will do some more later.+Goodbye."
3B6E:6F 75 20
3B71:68 61 76
3B74:65 20 63
3B77:6F 6D 65
3B7A:70 6C 65
3B7D:74 65 64
3B80:20 74 68
3B83:69 73 20
```

```
3B86:6C 65 73
3B89:73 6F 6E
```

```
3B59:79 65 2C
3B5C:20
3B5D:00          125           DFB  0
3B5E:2E          126           ASC  "."
3B5F:55          127 OKEND     DFB  85
3B60:47 6F 6F    128           ASC  "Good     work "
3B63:64 20 77
3B66:6F 72 6B
3B69:20
3B6A:00          129           DFB  0
3B6B:2E 2B 59    130           ASC  ".+You   have completed this lesson.+We will do some more later.+Goodbye."
3B6E:6F 75 20
3B71:68 61 76
3B74:65 20 63
3B77:6F 6D 65
3B7A:70 6C 65
3B7D:74 65 64
3B80:20 74 68
3B83:69 73 20


3B86:6C 65 73
3B89:73 6F 6E
3B8C:2E 2B 57
3B8F:65 20 77
3B92:69 6C 6C
3B95:20 64 6F
3B98:20 73 6F
3B9B:6D 65 20
3B9E:6D 6F 72
3BA1:65 20 6C
3BA4:61 74 65
3BA7:72 2E 2B
3BAA:47 6F 6F
3BAD:64 62 79
3BB0:65 2E 20
3BB3:00          131           DFB  0
3BB4:2E          132           ASC  "."
3BB5:            133           LST  ON

*** SUCCESSFUL ASSEMBLY: NO ERRORS
```

```
  34F2 ADDSPC       3486 AROUND       3281 BACK         3503 BEEPIT
  FBDD BELOUT       30BC BKUP           23 BW          ?3371 CDELAY
  32FC CLRLST       1F7E CLRSCR       330E CLRTOP       1F8C CLRWIN
 ?34C4 COUNTF       34C3 COUNTS      ?34C5 COUNTX       3361 DECDEL
  30BA DELAYC       333F DELAYD       30BB DELAY        3340 DELY
  3345 DELY1        3366 DELY2        3217 DIN2         321F DIN3
  3248 DINM         1D1F DISPLA       336C DISPWP       1CFB DISPWT
  32C7 DISREO       32CE DISREP       334F DLOOP        13E8 EDITY
  1083 EDTBTM       3819 ERREND       3632 EXA1D1       364D EXA1D2
  3644 EXA1DJ       3462 EXA1H        3463 EXA1L        3649 EXA1R
  3603 EXA1         3891 EXA4D3       388A EXA4DJ       3464 EXAD1H
  3465 EXAD1L       346A EXAD2H       346B EXAD2L       346E EXAD3H
  346F EXAD3L       3466 EXAJ1H       3467 EXAJ1L       346C EXAJ2H
  346D EXAJ2L       3468 EXARH        3469 EXARL        31F4 EXDONE
  30C8 EXPL         3462 EXTAB        34F8 FIXBEL       30C0 FLASH
  30BF FLASHC       33EA FLHCOR       33F6 FLHSEN       3271 FLREP
  33B7 FLSH1        33C5 FLSHM       ?13A7 FNMLEN       13A8 FSTNAM
  337C FULSCR       237F GETCUR       3085 GTNAME       30BD HBKUP
    24 HC           1F21 HIROUT       38A6 IN1          38F6 IN2P1
  3904 IN2P2F       390B IN2P2S       3913 IN2P3        392B IN3P1
  393A IN3P2        3941 IN3P3        396C IN3P4        322D INS33
  30C6 INSFLO       30F1 INT3         359D INTRO1       35CB INTRO2
  35CD INIRO3       31F5 JOININ       3603 L1E0         3603 L1E1
  365E L1E2         36D5 L2E0         36D5 L2E1         36D5 L2E2
  376D L3E0         376D L3E1         376D L3E2         3800 L4E0
  3800 L4E1         3800 L4E2         34F7 LASTHC       30C1 LESSON
  30C7 LE           3470 LESEXI       344A LETAB        3331 LOADVH
  3506 LOGONM       3033 LOGON          20 LW           3030 MONIT
  30B2 MOVED        30A5 MOVEII       1357 NEWRSP       329F NO3
  32B8 NO03         341F NOSCR2       3417 NOSCRL       343C OK
  3B5F OKEND        34D3 QUITP        32D9 RETURN       34E8 RET
  35DF RTNM           21 RW           3326 SAVEVH       3173 SAVNON
  34DC SCPTC2       34E3 SCPTC3       34C6 SCPTCH       3213 SECOND
  31A8 SENT3        3440 SHOW         34BD SKIP         34EC SPLCNT
 ?339A STAREL       3601 STARM        3394 STFLN1       3392 STFLNL
  39D9 SWRL         3A9C SWRL2        3427 TERM         34A7 TEXLP
  3259 TFJOIN       3244 THIRD        3391 TMPMSH       3390 TMPMSL
    22 TW           30BE VBKUP          25 VC           1B1E WAIT15
  205F WPEDIT
```

```
      20 LW                21 RW                 22 TW                23 RW
      24 HC                25 VC               1083 EDTBTM          ?13A7 FNMLEN
    13A8 FSTNAM          13E7 NEWRSP           13E8 EDITY            1B1E WAIT15
    1CFB DISPWT          1D1F DISPLA           1F21 HIROUT           1F7E CLRSCR
    1F8C CLRWIN          205F WFEDIT           237F GETCUR           3030 MONIT
    3033 LOGON           3085 GTNAME           30A5 MOVEIT           30B2 MOVED
    30BA DELAYC          30BB DELAY            30BC BKUP             30BD HBKUP
    30BE VBKUP           30BF FLASHC           30C0 FLASH            30C1 LESSON
    30C6 INSFLG          30C7 LE               30C8 EXPL             30F1 INT3
    3173 SAVNON          31A8 SENT3            31F4 EXDONE           31F5 JOININ
    3213 SECOND          3217 DIN2             321F DIN3             322D INS35
    3244 THIRD           3248 DINM             3259 TFJOIN           3271 FLREP
    3281 BACK            329F NO3              32B8 NOO3             32C7 DISREO
    32CE DISREP          32D9 RETURN           32FC CLRLST           330E CLRTOP
    3326 SAVEVH          3331 LOADVH           333F DELAYD           3340 DELY
    3345 DELY1           334F DLOOP            3361 DECDEL           3366 DELY2
    336C DISPWP         ?3371 CDELAY           337C FULSCR           3390 TMFMSL
    3391 TMPMSH          3392 STFLNL           3394 STFLN1          ?339A STARFL
    33B7 FLSH1           33C5 FLSHM            33EA FLHCOR           33F6 FLHSEN
    3417 NOSCRL          341F NOSCR2           3427 TERM             343C OK
    3440 SHOW            344A LETAB            3462 EXTAB            3462 EXA1H
    3463 EXA1L           3464 EXAD1H           3465 EXAD1L           3466 EXAJ1H
    3467 EXAJ1L          3468 EXARH            3469 EXARL            346A EXAD2H
    346B EXAD2L          346C EXAJ2H           346D EXAJ2L           346E EXAD3H
    346F EXAD3L          3470 LESEXI           3486 AROUND           34A7 TEXLP
    34BD SKIP            34C3 COUNTS          ?34C4 COUNTF          ?34C5 COUNTX
    34C6 SCPTCH          34D3 QUITP            34DC SCPTC2           34E3 SCPTC3
    34E8 RET             34EC SPLCNT           34F2 ADDSPC           34F7 LASTHC
    34F8 FIXBEL          3503 BEEPIT           3506 LOGONM           359D INTRO1
    35CB INTRO2          35CD INTRO3           35DF RTNM             3601 STARM
    3603 L1E1            3603 EXA1             3603 L1E0             3632 EXA1D1
    3644 EXA1DJ          3649 EXA1R            364D EXA1D2           365E L1E2
    36D5 L2E0            36D5 L2E2             36D5 L2E1             376D L3E1
    376D L3E2            376D L3E0             3800 L4E1             3800 L4E2
    3800 L4E0            388A EXA4DJ           3891 EXA4D3           38A6 IN1
    38F6 IN2P1           3904 IN2P2F           390B IN2P2S           3913 IN2P3
    392B IN3P1           393A IN3P2            3941 IN3P3            396C IN3P4
    39D9 SWRL            3A9C SWRL2            3B19 ERREND           3B5F OKEND
    FBDD BELOUT
```

```
99N

SOURCE FILE: PATCHES
0000:              1 :THE FOLLOWING PATCHES WERE MADE TO THE ASSEMBLED PROGRAM.
0000:              2 :
0000:              3 :0808 08 08 08 08 08 00 08 00
0000:              4 : MAKE AN EXCLAMATION POINT CHARACTER
0000:              5 :0F5E 21          DO NOT INCLUDE + AS PART OF TEXT
0000:              6 :0F7F 28          CHANGE ? TO +
0000:              7 :1026 27 21        CHANGE PERIOD TO EXCLAMATION POINT
0000:              8 :16C3 JSR 3000  INSERT LOGON CODE
0000:              9 :17E1 JSR 301B  ADD LINE AFTER 'VERY GOOD'
0000:             10 :1816 JSR 3018  FLASH CORRECT SENTENCE
0000:             11 :1823 0A          DECREASE WAIT TO 10 SECONDS
0000:             12 :1834 JSR 300F  PREVENT SCROLLING BY CLEARING WINDOW
0000:             13 :18EF JSR 301E  PREVENT SCROLLING BY CLEARING WINDOW
0000:             14 :1DC4 JSR 3006  ADD DELAY WHEN DISPLAYING TEXT
0000:             15 :20BA JSR 3015  SOUND BELL ONLY IF AT SAME CURSOR POSITION
0000:             16 :2351 JSR 2367  RECODE TO CLEAR KEYBOARD
0000:             17 :2354 LDA C000  BUFFER BEFORE LOOKING
0000:             18 :2357 CMP FF    FOR CARRIAGE RETURN
0000:             19 :2359 BEQ 2362
0000:             20 :235B CMP 8D
0000:             21 :235D BNE 2362
0000:             22 :235F CLC
0000:             23 :2360 BCC 2367
0000:             24 :2362 JSR 2FD0
0000:             25 :2A61 00        PUT PRACTICE
0000:             26 :26D4 00        ITEMS AT
0000:             27 :26DA 00        TOP OF SCREEN
0000:             28 :29A9 JMP 3009 ALLOW LIMITED NUMBER OF CORRECTIONS
0000:             29 :2BE5 JSR 2FE3  ADD 'OR SPACES' TO MESSAGE
0000:             30 :2DF4 JSR 3012  RESET COUNTER WHEN SPELLING CORRECTION MADE
0000:             31 :2F71 JSR 3003  EXAMPLE ROUTINE
0000:             32 :2FA3 JSR 3021  TERMINATION ROUTINE
0000:             33 :2FA6 NOP
0000:             34 :2FD0 JSR 237F  REMAINDER OF CLEAR KEYBOARD PATCH
0000:             35 :2FD3 JMP 23AD
0000:             36 :2FDA LDA (48),Y DELETE PERIOD FROM
0000:             37 :2FDC CMP #2E     ERROR MESSAGE
0000:             38 :2FDE BNE 2FE2
0000:             39 :2FE0 DEC 24
0000:             40 :2FE2 RTS
0000:             41 :2FE3 JSR 1CFB  ADD 'OR SPACES'
0000:             42 :2FE6 LDX 2F
0000:             43 :2FE8 LDY EF
0000:             44 :2FEA LDA 00
0000:             45 :2FEC JMP 1CFB
0000:             46 :2FEF 0B 6F 72 20 73 70 61 73 61 63 65 73 7F 2B
0000:             47 :3024 JMP 32E4  RESET KEYBOARD STROBE
0000:             48 :304C 0F     15 SECOND DELAY FOR READING
0000:             49 :316F 05      5 SECOND DELAY
0000:             50 :3446 09      9 SECOND DELAY
0000:             51 :37C1 20                MOVE +
0000:             52 :37C7 2B                TO END
0000:             53 :3858 20                OF
0000:             54 :3861 2B                LINE
0000:             55 :3E59 7C           INCLUDE PERIOD
0000:             56 :3F1C 54          CORRECT MESSAGE LENGTH
0000:             57 : USE MONITOR TO MOVE MEMORY TO DELETE THE INCORRECT E
0000:             58 :3F36<3F37.3F71
```

Part IV

PILOT STUDIES

Bruce Cronnell

with Ann Humes, Joseph Lawlor, and Jerry Bailey

One part of the NIE Communication Skills project is "Computer Utilization in Composition Instruction." The purpose of this inquiry is to investigate the use of microcomputers to improve composition instruction in the schools. The eventual goal of the inquiry is to study the feasibility of interaction between microcomputers and students as students write compositions. However, this goal implies two assumptions that needed investigation: (1) that students can input text and interact with computers; (2) that computers can be programmed to interact with student-inputted text. Consequently, the inquiry was organized to begin with simpler student-computer interactions before moving to the more complex goal of the study.

SWRL composition staff decided to begin with computer-based sentence-combining instruction. In sentence-combining instruction, students are given two or more sentences, along with one or more cues, and must produce a single sentence; e.g.:

Ana hit the ball.
Ana sent it soaring. (and) → Ana hit the ball and sent it soaring.

Research has demonstrated that sentence combining is an effective technique for enhancing syntactic fluency in writing and that it can be used successfully with students from elementary school through college (see Joseph Lawlor, "Improving student writing through sentence combining: A literature review," Technical Note No. 2-80/05). Moreover, sentence combining is practical for computer-based instruction because the expected student response can be clearly specified. In addition, sentence combining is appropriate for initial computer-based instruction because students are required to input only individual sentences, not whole texts. Thus, staff felt that sentence-combining instruction was an appropriate place to begin inquiry into computer utilization in composition instruction. However, staff assumed that in actual classroom practice students would first receive instruction in computer use and in typing.

The complete specifications for computer-based sentence-combining instruction are detailed in Part II. The instruction was designed to be appropriate for sixth graders and above. The instructional program, as used in the pilot studies, is comprised of four sections, summarized below.*

Introduction: A title/producer screen is displayed, followed by a request for the student's name. (This section is somewhat shorter than originally specified for a complete instructional program.)

Instruction: The computer displays two (or three) sentences and both tells and demonstrates how the sentences can be combined into one sentence. (The original specifications included animated graphics that demonstrated the combining process; however, the memory and programming demands of these graphics were too great to be practical, so a vastly simplified instruction section is currently used.)

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*The instructional program outlined here and used in the pilot studies reported below is an extremely simplified version of the program originally specified (see Part II, Section A). Simplifications in the specifications (see Part II, Section B) were necessary because of limits on computer memory and because of the limited time available for this project. Had the original specifications been utilized, few of the problems found during the pilot studies would have occurred. These problems suggest the difficulties that may be encountered when programming complex computer-based instruction.

Practice: A directions screen is displayed telling students (1) that they will now combine their own sentences and (2) that they should use specific procedures (e.g., check spelling, push RETURN when finished). Then a pair of sentences is displayed, followed by the student's name, which indicates that the student is to respond.

Evaluation:* After the student types in her/his combined sentence and pushes RETURN, the computer evaluates the sentence. The following steps are used in the evaluation:

1. Does the sentence begin with a capital letter?
2. Does the sentence end with a period?
3. Does the sentence have the appropriate "joiner"--that is, the word or punctuation mark required for the combining (in the currently programmed lesson, "and"/",", "/", and")?
4. Does the sentence have the appropriate number of words? (i.e., is it too long or too short?)
5. Are the words correctly spelled?

---

*This part of the program is much more sophisticated than evaluation sections of most computer programs. For example, it evaluates complete sentences rather than single characters or words. In addition, the program is sensitive to different types of errors (e.g., spelling, capitalization, number of words). See Appendix D for additional discussion of evaluating textual responses.

At each step in the evaluation process, if the answer to the question is "no," the computer directs the student to make the appropriate correction. If the student does not make the appropriate correction in step 5, the computer makes the correction for the student.* If the student does not make the correction in steps 1-4, or if, after step 5, the response is still not correct, the computer provides the correct sentence and cycles the student back to the Instruction section, using a different example. A student may be cycled back to the Instruction section two times within any one Part of the lesson; on the third sentence that the student does not correct, instruction is terminated.

When the computer finds that the student's sentence is correct, the student is presented another set of sentences in the Practice section. After three correct sentences in one Part of the lesson, the student is cycled to the Instruction section for another Part of the lesson.

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*In step 5, the correction is made only if one of the following discrepancies is found between the correct word and the incorrect word: (1) the incorrect word contains one letter that is different from the corresponding letter in the correct word; (2) the incorrect word contains one letter too many or one letter too few; (3) the incorrect word contains one pair of transposed letters.

After successfully completing all four Parts of the lesson or after spending 20 minutes on the computer, instruction is terminated.

The single sentence-combining lesson currently programmed contains four Parts (specified in Part II, Section C). The parts differ in the syntactic structures in the sentence to be combined or in the number of sentences to be combined:

A: coordinate predicates; e.g.:

Tom jumped for the ball.
Tom missed it. (and)
→ Tom jumped for the ball and missed it.

B: coordinate adverbs, predicate adjectives; e.g.:

The baby slept soundly.
The baby slept quietly. (and)
→ The baby slept soundly and quietly.

The pond is deep.
The pond is muddy. (and)
→ The pond is deep and muddy.

C: coordinate direct objects, predicate nominatives; e.g,:

Mary bought a magazine.
Mary bought a book. (and)
→ Mary bought a magazine and a book.

Peter is my friend.
Peter is my neighbor. (and)
→ Peter is my friend and neighbor.

D: coordinations from Parts A-C, using three kernel sentences; e.g.:

The hikers were cold.
The hikers were hungry. (,)
The hikers were tired. (, and)
→ The hikers were cold, hungry, and tired.

A complete program of sentence-combining instruction is specified to contain 11 additional lessons (see Part II, Section D).*

This instruction is programmed on an Apple II microcomputer. A major programming-design feature is the text editor, which allows students to input sentences in upper- and lower-case and to edit these sentences (during both the Practice and Evaluation sections); see Part I, Section A for a description of the text-editor operations. A full description of the programming, including a program listing, is found in Part III.

After the computer-based sentence-combining instruction was developed, the program was used a number of times by staff to check it out and to locate any errors in the displays or "bugs" in the program. Although some problems were noted, staff found that the program ran very well, did what it was expected to do, and was far more sophisticated than any currently available courseware for language arts instruction. After the bugs were corrected, three pilot studies were conducted to assess how well the program worked with users not familiar with it.**

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*The content of the programmed lesson is relatively simple because it serves as (1) an introduction to using the computer and the text editor, and (2) an introduction to sentence combining. Although the content for this lesson would be suitable for students below grade 6, the content of later lessons is more complex and not appropriate for younger students. Moreover, the vocabulary used in the lesson assumes that students are reading at the sixth-grade level (or above).

**Unfortunately, staff missed one error. In the Evaluation section, if the computer finds an extra word (including a period or a comma not immediately following a word), the message is supposed to ask students to check for "extra spaces or extra words." The message used in the pilot studies mentioned only "extra words." This error created only minor problems in the pilot studies and has been corrected.

The first pilot study used two SWRL secretaries. Although adults are not the intended audience for the program, secretaries were used because (1) they were readily available, (2) they had typing skills, and (3) they were not expected to have any problems with the instruction. If the secretaries had had any difficulties, it was expected that these problems would be magnified for the students for whom the instruction was intended.

The second pilot study was conducted with students in grades 4-6 in a public school. The study conditions (described below) were far from ideal or "normal"; however, the study allowed staff to observe a large number of students interacting with the program, although the students had little or no background in computers or sentence combining. If the instruction could work under such unusual circumstances, then it could undoubtedly work under more typical classroom conditions. Moreover, since the instruction was designed for sixth grade and above, this study provided a severe test of the program because some fourth- and fifth-grade students used it.

The third pilot study was conducted individually with six children. These children all had some typing experience (which was not the case in the second study) and were given typing practice before using the sentence-combining instruction. Moreover, they worked under less distracting conditions, had enough time to get thoroughly involved with the program, and were generally older--closer to the age for which the instruction had been designed.

The results of these three studies are reported below.

STUDY ONE: SWRL SECRETARIES

Two SWRL secretaries--experienced word-processor operators--individually went through the SWRL computer-based sentence-combining instruction.

Procedures

Before the sessions, the secretaries had been given a description of the text editor used in the instruction (see Part I, Section A). In the introduction section of the program, when students are to type their names, the secretaries briefly practiced typing to familiarize themselves with the text editor. Then they typed their names and went on with the program. A composition staff member sat with the secretaries to give background, provide instructions, answer questions, and observe.

Results

No major problems were experienced.* Because the secretaries were experienced typists, accustomed to typewriters and a word processor, they had to adjust to the text editor used in the program. However, the students for whom the instruction is intended--who would not be so experienced with typewriters or word processors--would probably have less difficulty adjusting to the text editor.

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*On a few occasions, the screens flashed by too quickly to be read. This programming problem has been corrected.

The secretaries had a few slight difficulties with the program. Some of these problems result from the fact that the current program is, in many places, a vastly condensed and simplified version of the originally specified program.

During the Instruction section, the secretaries thought that they were supposed to do something besides read the screen. At least three reasons can be suggested for this expectation. (1) The secretaries had just completed typing activities. (2) They are used to typing at a terminal, not looking at one. (3) The text uses imperatives, which suggest that the user is to type something.

When the Practice section began, the secretaries weren't sure of what to do. There seem to be two problems here. (1) No instructions appear on the screen when the user is to type answers; the instructions are on the preceding screen. (2) No explanation is given for the presence of the student's name on the screen; however, the original specifications included the message that the name indicated that the computer was waiting for the student to type an answer.

One secretary was unsure of the message "Press RETURN when you are ready." She asked, "Ready for what?" (Possible solution: Change the message to "Press RETURN to go on.")

The Instruction sections for Parts B and C are similar to that for Part A; they differ in the syntactic structure of the sentences to be combined and, for Part C, in the added information that some repeated words must be included. One secretary said that the Instruction section for Part C looked the same as what she had seen before (although she did recognize what was different when the added information was displayed).

Conclusions

This brief study indicated that the sentence-combining instruction can be used successfully with adults, at least under the supervision of someone familiar with the program. Independent use of a new machine and new activities may not be possible in any case. Moreover, the simplified version of the program now available has omitted several elements that would help students become more independent. However, if the computer were in actual classroom use, time would be reasonably spent on initial supervision because students would be spending a considerable amount of independent time on the computer with later instruction.

STUDY TWO: PUBLIC SCHOOL

During the last week of the school year, a pilot study of the SWRL computer-based sentence-combining instruction was conducted in a public school in the metropolitan Los Angeles area. The school has about 400 students and is in a racially and ethnically mixed, low-income neighborhood; some students are in bilingual classes.

Procedures

The SWRL Apple II computer was set up at one side of the school library. Along another side of the library were four other microcomputers, on which students could create graphics or play one of three educational games.

Students in grades 4-6 came to the library in groups of 6-8 every 20 minutes. Teachers voluntarily sent students from their classes to these sessions. However, the grounds for student participation within classes are not known. Some students also wandered in before and after school and during recess and lunch in order to use the computers.

When students came into the library, the five computer activities were briefly described, and students could go to whichever they wanted to work with. When students went to the Apple II, they were given instruction by one of the SWRL staff present or, on the morning of the first day, by a fourth-grade girl who had received instruction earlier in the morning and who was serving as a helper.

At least 30 students interacted with the sentence-combining program for 5-20 minutes each (with considerably more time for the helper on the morning of the first day).

Results - Text Editor

As opposed to most computer programs used by children, the sentence-combining program requires students to enter text. This was a concern for SWRL staff since most upper-elementary children (or even older children) are not familiar with typewriter-style keyboards. Thus, students typed with the hunt-and-peck method, frequently with a single finger.* It was immediately obvious that hunting and pecking didn't really bother the children; in fact, it seemed to be a challenge. While some students appreciated occasional help in finding specific letters, most seemed quite content (and not frustrated) to search them out for themselves.

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*A few minor keyboard problems were observed that would presumably be problems for any novice typist. These problems are noted here because they may represent general problems for all children who are inexperienced with keyboards. (1) Capital "I" on the keyboard may look like lower-case "l"; students occasionally typed "I" for "l," but easily saw the problem when they looked at their text. (2) The only unlabeled key on the keyboard is the space bar; students had to be told specifically to use the space bar to put space between words. Clearly, a labeled space bar would help novice typists. (Students occasionally used the forward arrow key for spacing; this procedure has the same effect as using the space bar.) (3) The keyboard contains a number of keys not needed for the program (e.g., ESC, RESET, the whole top row of number/symbol keys); hunt-and-peck typing may be easier if unnecessary keys are covered so that students aren't distracted by them. (A positive feature of the program is that, when typing, only the 26 letters plus the comma and the period will function--that is, only those keys needed for actual responses called for in the program.) (4) Several children complained--reasonably--about the strange way that letters are arranged on the keyboard (a known problem with the QWERTY keyboard).

Spelling ability seemed to affect the efficiency with which the children were able to type. When they could remember a whole word, students could type it more easily than when they had to refer back to the set of sentences on the screen to check the spelling. With practice (which never lasted for more than 20 minutes, except for the girl who served as a helper), a few students seemed to be learning the positions of a few letters on the keyboard.

Staff were concerned about the special functions of the text editor used in this program since these features differ from typewriter operations (see Part I, Section A). Although such differences may be problems for adults who have well developed typing (and word processing) skills, they seem not to be problems for children, who don't know anything about such machines. When told that there is a certain way to do something (e.g., capitalize), they just go ahead and do it.

Because each sentence that students type must begin with a capital letter, staff were primarily concerned about the method by which the computer goes into the capitalization mode (and then back to the lower-case mode). Students used this procedure with no serious problems (although a few children at first had some trouble holding down two keys at once).

The delete function on the text editor is somewhat complex, and students simply used the space bar to delete. This method worked quite well, and when staff understood the efficiency of the method, they told the children to use the space bar in order to delete. (Fortunately, the part of the program that analyzes students' responses ignores the length of the space between words. Variable spacing would not be so acceptable if students were entering text that would be printed, but is no problem in this program, where the entered text is not saved.)

Although the text editor permits students to make corrections by typing over incorrect text, students generally corrected by removing the error (with the space bar) and then entering the correct text. Students seemed to create this process themselves, without instruction. In addition, they seemed somewhat confused/bothered by the over-typing approach--perhaps because over-typing creates strange "words" (e.g., while over-typing him to get the, the screen displays tim and thm). Moreover, deletion and then addition is more like regular writing, where students erase errors and write in the correct form.

The insert function is a complex process; consequently, because students were using the program so briefly, insertions were generally made for the students to save time. However, when students tried to insert on their own, they generally deleted text (with the space bar) and typed in the insertion (plus the old text that followed the insertion). This is less efficient than using the insert function of the text editor, but perhaps easier for children to understand, at least when time is limited.

The text editor has a word-wrapping feature; that is, when a word won't fit at the end of a line, the whole word is moved to the following line. When the students' text moved near the end of the line, some children asked about fitting everything on the line, so word-wrapping was explained (non-technically) to them. When they did not ask about room at the end of the line (and sometimes even when they did), they were frequently surprised to find the word they were typing suddenly appear on a new line. This seemed not to be a problem, only an adjustment. (In actual classroom use of this sentence-combining program, students would receive instruction and practice on the use of the text editor before using the sentence-combining program.)

Results - Instruction Section

In the instruction section, students apparently expected to do something with a computer, not just read/look at the screen; students seemed to think that they should type the sentence because the explanatory text uses imperatives. Students had to be told to read the screen.*

However, it is not clear that students were always reading the text or that they always understood what they were reading. Their eyes generally moved to the appropriate part of the screen where there was movement (a flashing arrow, flashing words, text displayed letter by letter), but they sometimes didn't seem to be making the connection between the textual description of sentence combining and the graphical depiction of the combining. However, many of the students in this study were in grades 4 and 5--below the grade level for which the instruction was written; some of the students also had limited English language abilities. Older students (as in Study Three) seemed to have fewer difficulties reading the text. Moreover, if students were working independently (without adults watching and commenting), they might attend more carefully to the text. In addition, if the originally specified animated graphics had been used, they would have undoubtedly made this section more interesting and comprehensible for students.

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*Solutions to this problem include (1) returning to the original specifications that told students what would be displayed when they were to type, (2) adding a message to read the text, (3) changing imperatives to declaratives, and (4) revising the section to make it interactive.

The Instruction section is repeated at the beginning of each Part of the lesson. The Part B Instruction section is the same as the Part A Instruction section except in the syntactic structures of the examples being coordinated. Students did not seem to need this repeated instruction; they seemed to understand the notion after initial instruction. The Part C Instruction section indicates that sometimes certain repeated words (like a, an, and the) must be left in. Under the pilot-study conditions, students appeared not to need instruction on these details--they appeared to figure out for themselves, on the basis of how the sentence sounded, which words should be deleted or repeated. Moreover, the Evaluation section helped students add/delete necessary/unnecessary words. However, under normal (unsupervised) classroom conditions, students would probably delete all repeated words unless the computer said that it was acceptable to repeat words. And students would not understand Evaluation messages to add words if they had not been told that a, an, and the could be repeated. Consequently, although the Part C Instruction section might not have been critical in pilot studies, it would be necessary in normal operations. (The Part D Instruction section introduces three-sentence coordination. However, because of time constraints, students never got to that Part.)

The Instruction section has a speed-up feature built into the programming: Whenever a flashing arrow or flashing text appears on the screen or when letters are being added to the example sentence, pressing RETURN will move the program immediately to the next display. The student helper was able to understand and use this function, and SWRL staff, working with the students, used it to move children through more quickly so that they could enter their own sentences during the limited time available. In addition, students seemed to anticipate the "push RETURN" message after a little experience, and appeared to push RETURN without necessarily reading the message to do so.

The flashing arrow directs students' attention to the next place to read. At least one student asked, "What's the arrow for?" Although the flashing arrow attracts their attention, students seemed to need to be told explicitly to read where the arrow was flashing. Moreover, it also seemed to help if children read the text aloud; that way they did read all the instruction. Again, the problems here may be the result of students being below the grade level for which the instruction was designed.

Results - Practice Section

The directions at the beginning of the Practice section are the same for each Part of the lesson. The original specifications anticipated that students would exit from the lesson on one day and come back on another. However, while still working on the same day, students may not need the full directions repeated. In fact, the directions might even be simpler on succeeding days.

Generally, students performed very well on the Practice section (other than having the typing problems noted above). They read the two sentences and typed in their (usually correct) combined sentence. The only problem noted was that students weren't sure of what to do. The screen doesn't say to do anything; it just presents the sentences and the student's name. The original specifications included an explanation that when the student's name was displayed, the computer was waiting for the student to type something.* Either such an explanation should be added to the program, or directions should be added at the top of the screen (e.g., "Combine these sentences").

Sometimes staff told students to say the combined sentence first and then type it; this seemed to help. Since oral production of combined sentences is suggested in the research literature, perhaps the program should explicitly encourage students to say sentences before typing them.

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*The presence of this explanation might also alleviate a problem noted with the Instruction section: that students expected to type something. With the explanation, students would know that they should not type because the computer had not displayed their name.

Results - Evaluation Section

This section of the program works very well. However, the various specific interactive responses were infrequently used because the students made very few mistakes. They entered their sentences very carefully, re-read them to check for errors, and made corrections when they found errors. In the course of this pilot study, only a few times did the computer have to respond to spelling, capitalization, or punctuation errors. Nor did the computer have to respond more than a couple of times because of too few words in the student sentences. The major response was too many words ("Do you have any extra words?"), and the extra words were words unnecessarily repeated from the second sentence; i.e., words that should have been deleted. Frequently, the student had pondered over whether to include the extra word(s) and therefore had no difficulty in determining what correction was necessary. However, the fact that there were few student errors may in part be the result of the adult supervision provided; staff may have encouraged more careful work than students would have done on their own.

Results - Other

This pilot study provided staff many opportunities to observe cooperative learning. A student who had watched another student do Part A could easily take over and do Part B. Students often helped each other; this did not seem like "cheating"; rather, both students were learning at the same time.

In addition, students clearly can teach each other how to use the program. Consequently, in an actual classroom situation, a teacher could instruct one or two students on computer operations; these students could then teach other students, who could teach other students, and so on. Using the student as teacher not only would save the classroom teacher time, but also would provide learning experiences for the student-tutor.

Students seemed to have much more patience than might be expected and could work with the computer despite distractions (e.g., students playing games on the other computers, several adults observing). However, impatience and distraction seemed to increase when students were reading rather than interacting with the computer.

The computer records the time that the student is using the program and terminates ("enough for today") when the student has been on the program for 20 minutes. Because students (1) had to learn how to use the text editor and (2) used hunt-and-peck typing, 20 minutes wasn't sufficient for pilot-study purposes, although it might be enough time in regular classroom use.

Conclusions

The sentence-combining instruction works well with the children for whom it was intended and even with children at lower grade levels. Some adjustments in the program would probably make it easier, more comprehensible, and more interesting for students. However, the program is considerably more sophisticated--in terms of both instruction and programming--than any language arts computer programs commercially available and than nearly all other experimental language arts computer programs.

STUDY THREE: INDIVIDUAL CHILDREN

During summer vacation, six children came to SWRL to use the SWRL computer-based sentence-combining instruction. All six were either children or relatives of SWRL staff and all six had had some previous typing experience. The children were ages 9-13 and were entering grades 4-8. Thus, they were somewhat more similar to the student population planned for this instruction: They had some typing ability, and most were in grade 6 or above.

Procedures

Before the children undertook the sentence-combining instruction, they practiced typing on the Apple II microcomputer, using the Microsoft "Typing Tutor" program. In "Typing Tutor," the student practices with sets of four letters, beginning with ASDF (the left-hand home row) and gradually adding the rest of the keyboard as speed and accuracy increase. Each child spent approximately 1/2 hour in typing practice, which included some exposure to most or all of the letters on the keyboard. (Numbers and symbols were not emphasized because they do not occur in the sentence-combining program.) Practice with "Typing Tutor" was introduced by a SWRL staff member, but the children worked independently most of the time.

After a break, the children returned to do the sentence-combining program while a staff member observed and assisted (when needed). At the beginning of the program, when the student's name was requested, the capitalization function of the text editor was explained, and students were given a few minutes to practice typing sentences. Then students proceeded through the program.

The program is timed to terminate after students have been on the computer for about 20 minutes. However, this did not allow enough time for students to complete the lesson. Thus, after the program terminated for four of the children, a SWRL staff member took over the keyboard, quickly running the program from the beginning to the point at which the child had left off. Then the children continued to the end of the lesson.

Results - General

All children did quite well. They had few or no problems with either the text editor or with the program. Some problems noted in the previous study were also noted here (e.g., expecting to type during the instruction section), but seemed less serious, probably because the students (1) were generally older, (2) had some typing experience, (3) had more time, and (4) were working under far less distracting conditions.

The fact that the children all had some typing ability/experience seemed to make things go more smoothly. Certainly, their responses were generally more fluent than those of the students in the previous study. (This result is not unexpected because typing ability is a planned prerequisite to the SWRL computer-based sentence-combining instruction.)

Results - Evaluation Section for Part D

Part D had not been used with students before. This part teaches the combination of three sentences into one. Children sometimes had trouble with comma inclusion and with comma spacing. They needed explicit instruction that a comma (1) immediately followed a word without an intervening space and (2) was immediately followed by a space. These are typing conventions that children would not be familiar with because spacing for commas is not critical in handwriting. Moreover, in school, students are generally taught to put commas between words--without regard for spacing.

However, the Evaluation-section messages for comma errors were sometimes confusing. If the second comma is not included (but and is included), the message is that the sentence "should have ', and'." If and is not included (but the preceding comma is included), the message is also that the sentence "should have ', and'." Students didn't seem to see the comma in the ", and" message; moreover, the inclusion of both the comma and the "and" in the same message may be confusing. (This confusion could be alleviated by treating the comma and the "and" as two separate messages, but this solution presents programming problems. Another solution would be to ignore the comma before "and" since this comma is not required in many style manuals.) Although some revisions in the Evaluation procedures for Part D might be helpful, problems with comma spacing would probably be considerably alleviated if students were more familiar with standard typing conventions.

Conclusions

Once again the appropriateness of computer-based sentence-combining instruction was demonstrated, especially with students in grade 6 and above (the level for which the program was designed). Some revisions in the program could help improve the instruction, but basically it is a sound program.

CONCLUSIONS

The primary conclusion from these three pilot studies is that the SWRL computer-based sentence-combining instruction worked very well, even though the students were generally younger than had been planned and even though the students were generally limited in their typing ability. Moreover, this one relatively brief segment of computer-based instruction was piloted under unusual circumstances and not integrated into a full curriculum of computer utilization; in more normal classroom conditions where computer use is part of regular procedures, the sentence-combining instruction could be expected to perform even better.

The extremely sophisticated programming used in this instruction operated very well. The pilot studies demonstrate clearly that interactive composition instruction utilizing computers with word-processor capabilities can be a reality.

The instructional program used in these pilot studies is a considerably simplified version of that originally specified. However, even in this simplified form, the instruction, practice, and evaluation were very effective. As would be expected in a pilot study (especially a pilot study with new media and new procedures), some places were found where revisions would probably increase the power of the instruction. Most of these revisions are relatively straightforward and could be incorporated into the program. Moreover, most of these revisions would result in a return to the original specifications, which handled many of the problems found in the pilot studies. However, even without these revisions, the applicability of computers in composition instruction has been clearly demonstrated. Given adequate resources, computers could be powerful and positive forces in the improvement of composition instruction.

APPENDICES

A. Using Microcomputers for Composition Instruction

B. "Computers and Teaching English: Bits 'n' Pieces"

C. User Manual: Composition Instruction on a Microcomputer

D. Evaluating Textual Responses

E. A Sequence for Sentence-Combining Instruction

APPENDIX A

USING MICROCOMPUTERS FOR COMPOSITION INSTRUCTION*

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ABSTRACT

Microcomputers are becoming increasingly available at affordable prices, thus permitting their use in a variety of educational settings. Such computers have word-processing capabilities that allow text to be generated, revised, and printed on the machine. Because of these features, microcomputers offer considerable power as supplemental aids to classroom instruction. In particular, the mechanical means for changing text can promote the active revision of student writings. Microcomputers and word processors are described, and the possibilities for instruction are discussed.

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*Paper presented at Conference on College Composition and Communication, Dallas, March, 1981.

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USING MICROCOMPUTERS FOR COMPOSITION INSTRUCTION

Bruce Cronnell and Ann Humes

Today we want to talk about some of the work we're doing at SWRL to develop composition instruction for use with microcomputers. We'll talk about some general features of microcomputers as they relate to composition, about what we're not doing, and about what we are trying to do.

However, we should first note that we're not computer experts; rather our backgrounds are in instruction. Our work is based on analysis of the composing process, and we have decided to use microcomputers because we think they can help us improve composition instruction.

The title of our presentation is "Using Microcomputers in Composition Instruction." When we mention this work to some people, the reaction is a question: "Using microcomputers in composition instruction?" Many people reason that you can't mix a humanistic activity like writing with a machine like the computer.

We think otherwise, and we'd like to indicate why.

First of all, it's important to remember that the computer is only a tool--it depends on humans to operate it. We humans can't write anything without tools. Originally we used stone and clay, then paper and pen, then pencils and yellow pads. Some place along the line we got fountain pens rather than ones that had to be continually dipped in ink. Now we have a variety of ballpoint and felt-tip pens. Surely we all appreciate these changes and don't want to return to quill pens or clay tablets.

Another major change affecting writing was the invention of the typewriter. A great many professionals compose much, most, or all of their writing using a typewriter. And most of us who use typewriters have been greatly pleased with electric typewriters--another technical advance that helps in our writing.

The most recent advance involves the use of a word processor that is tied into a computer. A word processor has a keyboard very similar to that of a typewriter, but your text shows up on a screen and is stored in the computer. What's especially valuable about a word processor is all the things you can do with your text after you've typed it (or while you're typing it). One thing you can do is to delete text--from a single letter up to a page or more. And when you've deleted something, the text closes up so that you can't even tell there's been a deletion. Similarly, you can insert any amount of text, and the word processor accommodates the added text. You can also rearrange text. For instance, you decide that you want to move a paragraph; with a few simple operations, you can move that paragraph anywhere you want it (even into the middle of another paragraph). With a word processor, you can also easily do minor, but nuisancy, things like change capitals to lower-case (and vice versa) and reverse letters that have been transposed. These various machine functions permit you to change text in all sorts of ways. Then after you've made your changes (which can be at anytime, since the computer stores whatever you've done), you can print out your final text the way you want it. (And if you don't like what comes out, you can go back and change some more.) In other words, the word processor is a great machine for revising.*

Considerable research has indicated that revision is one of the most important parts of the composing process. But the research has also indicated that students don't receive very much instruction on the revising process and that they don't revise very much.

One reason that students don't revise is that it's a lot of work. It's easy enough to mark up a paper with all the changes--crossing off, drawing lines to move pieces, inserting new information. But it's quite another matter to recopy the whole paper. It's a very time-consuming, tedious, and unrewarding task. And when we recopy, we often make mistakes that have to be fixed up, leaving a product that still doesn't look too good. No wonder most students don't like to revise. It's a lot of trouble.

But with a word processor, the work of revision is much easier. Major and minor changes can be made without having to recopy. The changes take place right before your eyes, and you can read your clean revised text immediately. In fact, with a word processor, revision can be fun. Consequently, we are using word processors in writing instruction.

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*The word processor can do a lot of other things that are also useful, but probably more of interest to a typist or anyone else preparing formal documents. For example, it can automatically place footnotes and number pages when it prints. You can easily make all kinds of changes in margin width. Or you can change spacing with a couple of quick operations. Although all of these features--and many more--are really quite marvelous, they're not critical for composing, which is what we're concerned with.

Now for a brief word on microcomputers before we talk about actual instruction. Microcomputers are small, self-contained computers. They get smaller and smaller each year; they also get more and more powerful. And, very importantly, they get cheaper and cheaper. Even at present, they are inexpensive enough for most school systems to afford at least a few. As the price goes down (and the power of the systems goes up), there is good reason to believe that before long, all classrooms will (or at least can) be equipped with microcomputers. Our work is preparing for that time when all students will have access to microcomputers.

But what can you do instructionally with microcomputers? Well, just about anything you can do instructionally with regular computers. But since microcomputers are much cheaper, you can do things that are more likely to be used with students. Also, some microcomputer systems have advantages less commonly found with full-size computers--for example, simple use of graphics.

However, we don't wish to do just anything. Computers have been long recognized for their usefulness as providers of drill and practice, or as complex programmed texts, or as mechanical workbooks. Although all of these uses can be appropriate for composition, they are not the focus of our work.

Instead (as you may have guessed from our emphasis on the word processor), our focus is on actual composing on a microcomputer word processor. We've only just begun our work in this area, so our comments will necessarily be suggestive.

Since we think that revision is one of the most valuable uses of word processors, that's one of our major focuses. We can do several things instructionally with revision; I'll outline a few of them.

1. After appropriate instruction on revision, students could be given prewritten text and asked to revise it on the word processor. The microcomputer could respond to student changes in several ways. It could refuse to let the student go on if a change is not made. Or if the student did not make the right change, the computer could make the change for the student and point it out. Other possibilities also exist.

2. After a student has composed a text, the microcomputer could suggest that he/she make revisions. For example, when two short sentences are found together, the computer could ask the student whether the sentences might be combined into one. When the same noun or noun phrase occurs in two consecutive sentences, the computer could ask the student whether the second one might be replaced with a pronoun. When a paragraph is very short, the computer could ask the student whether he/she wishes to add more information. Of course, the student wouldn't be required to make the changes suggested by the computer, but the approach is valuable because the computer interacts with the student while she/he is writing or revising. We could all be helped by having a personal editor to work with us. The computer can help to be an editor for the writer.

3. After a student has composed a text, the microcomputer could look for specific kinds of errors in her/his writing (e.g., spelling), mark the line/sentence/paragraph where the error occurred, and require the student to correct it.

4. The teacher could also act as editor, interacting with student writing in ways similar to those suggested above.

One of the first things we are doing with the revision process is to teach sentence combining using the microcomputer. Research indicates that sentence combining can help increase syntactic fluency and improve student writing. We believe that sentence combining can also be valuable for the revision process. We have written instruction for sentence combining as a way to begin our study of composition instruction with the microcomputer. We picked sentence combining because it is based on a solid research foundation and because constraints can be built into it that make it amenable to computer-based instruction. For example, the expected output can be specified so that the computer knows what kind of response to look for. Moreover, because most elementary and secondary school students have had little experience with microcomputers and word processors, this seems to be a straightforward place to begin: A stimulus is given, and the student types in the appropriately combined sentence.

We discovered right away that programming even for such "simple" content as sentence combining is far from easy. Once we begin working with natural language, programming becomes very complex. Moreover, since we are permitting students to type in their own responses, there are theoretically an infinite number of possible responses. (Of course, we assume that students will seriously attempt to get the appropriate answer, but even so, "natural" mistakes are possible.) It's just not so easy as programming for multiple-choice instruction. We believe that working with sentence combining will be the most appropriate way for us and the students to begin--it goes beyond simple multiple-choice activities, but stops short of activities that require more complex programming and student-computer interaction.

The microcomputer can be valuable for another area of composition instruction--teaching students to generate content. Depending on the type of discourse the student is to write, the computer could ask a set of heuristic questions about the subject. The student's answers could be stored for later use when the student is actually writing the desired composition. This procedure not only would help students generate content for a specific composing task, but also would teach them to use heuristic probes while composing.

We also believe that the microcomputer will be valuable for teaching students to arrange content. We noted earlier that word processors are capable of rearranging text. Computer-based instruction could teach students the arranging process and demonstrate the effects of various arrangements. It could then work with students as they attempt to arrange content for writing.

A more difficult instructional task is to have students use the microcomputer when they actually write. We haven't yet worked out the details of our ideas, but we think they're promising. One possibility is to present the student with a simple figure or pattern to describe (for example, an arrangement of geometric shapes). The computer could construct the figure/pattern as the student composed the description. If the student's description was appropriate, the original and the computer-generated figure would match. If they didn't match, the student could be helped to determine where his/her description was inappropriate.

Today we've suggested a number of ways in which microcomputers and word processors may be useful for composition instruction. There are many, many more possibilities than these--many that haven't even been thought of yet. Microcomputers and word processors are important tools for business, industry, academia, and individuals; we also believe that they can be valuable tools for composition instruction.

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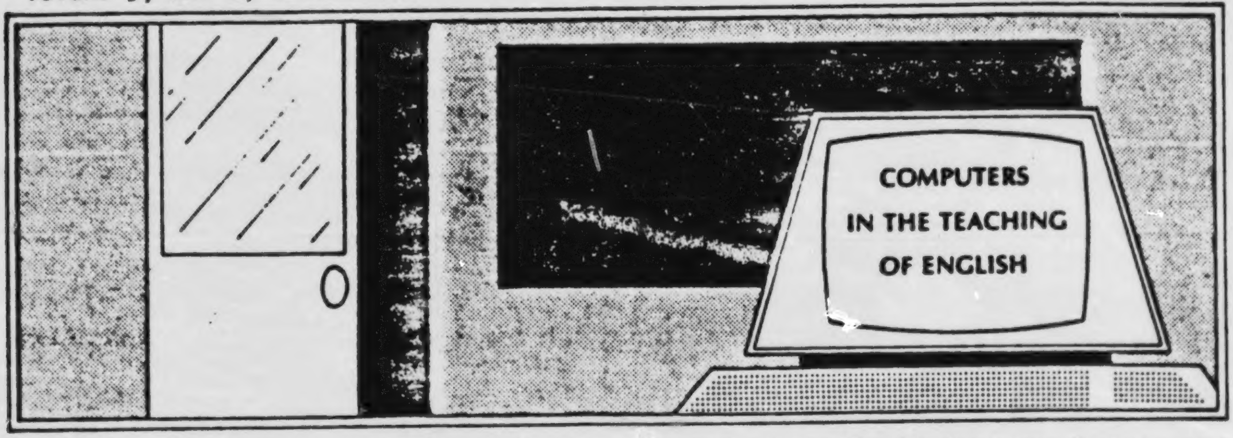

Editor's Note: If you are interested in the use of computers in the teaching of English, then you will want to read and/or contribute to this column.

COMPUTERS AND TEACHING ENGLISH: BITS 'N' PIECES

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In talking with English teachers about computers, I am most frequently asked about ways computers can help teach composition. Each time I hear that question posed, I wonder if teachers want computers to teach composition or really wish that the computer could grade compositions for them. Given the numbers of papers English teachers must grade if they do teach composition, it is no wonder that they seek relief. Perhaps we will be able to do both of these tasks on a computer in the not too distant future.

As a matter of fact, we have a number of people around the country now who are interested in developing materials for teaching the writing process. SWRL Educational Research and Development, Los Alamitos, California, is heavily involved in the development of CAI courseware for the teaching of composition. Their approach is taking them away from the present concentration on drill and practice materials and is focusing on the process of composing itself. They are using the APPLE II as their delivery hardware and have identified four specific elements of composing in their development plan: sentence combining, generating content for a particular discourse type, organizing content, and revising. Ann Humes, a member of SWRL's professional staff, indicated that sentence combining has been chosen as the first area for development because considerable research has been done in this area and the process lends itself well to computer-based instruction.

The program they have produced presents a stimulus of two or more sentences, after which the user responds with an appropriately combined sentence. Since the anticipated responses are specified, the computer can match the input to the stored specifications and feedback an appropriate reply to the user.

Teaching writers to generate content for a particular type of discourse is currently in the development stage. A brief description from SWRL of this critical step in the writing process indicated that the "instruction first assists students in generating content for a specific topic and then generalizes the instruction to teach students to use heuristics whenever they must generate content for composing."

The plans for the materials to teach organizing content call for students "to be taught the process of arranging as well as specific paradigms that can facilitate organizing content for different discourse modes and product forms." SWRL's plans for developing CAI materials for the revision process are focused on the word processing capabilities of the computer. Their ultimate goal is to develop instruction which "will involve the actual composing of complete texts."

You may write to Ann Humes, SWRL Educational Research and Development, 4665 Lampson Avenue, Los

Alamitos, CA 90720 for more information and a copy of the lengthy bibliography of written materials they have produced on the writing process.

Developing good courseware, as most of you know, is a difficult and time-consuming job. I cannot afford to devote a lot of my time to this activity, but I receive my greatest sense of satisfaction as a teacher when I can stimulate others to work with me to produce a product for possible use with students in the classroom. In a recent course I taught, Kathi Simon, one of my graduate students who had very little programming experience, took a CAI model I had developed in class and produced a computer program which she said she needed very badly to use in her classes. When I asked why she needed this program, she said that she was faced with remediating 8th grade students in basic skills and she found that the most difficult thing for them to practice was a skill which required them to distinguish between a statement of fact and an opinion. So, with help from a math teacher who had a TRS80 in his classroom, she produced a simple program which she felt would give her students needed practice in developing that skill.

After looking at the program, I asked her permission to modify it for an APPLE II and utilize some of the special features of that machine to enhance her initial effort.

I immediately enlisted the aide of a colleague, Craig Greenberg, a junior high school student who lives around the corner from me, and discussed with him what this program would need to interest students having to use it. We have not been able to test it on students yet, so we have no way of determining how successful it will be in meeting its educational objective. I make no claims, whatsoever, for the program other than the fact that it was developed by a classroom teacher for a specific need, which I believe is one of the critical factors in determining how successful teachers will be in using computers in the classroom.

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10  POKE 216,0
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90  GET Z$
100  FOR X = 50 TO 75: POKE 0,X: POKE 1,50: CALL 768: NEXT X
110  POKE 216,0
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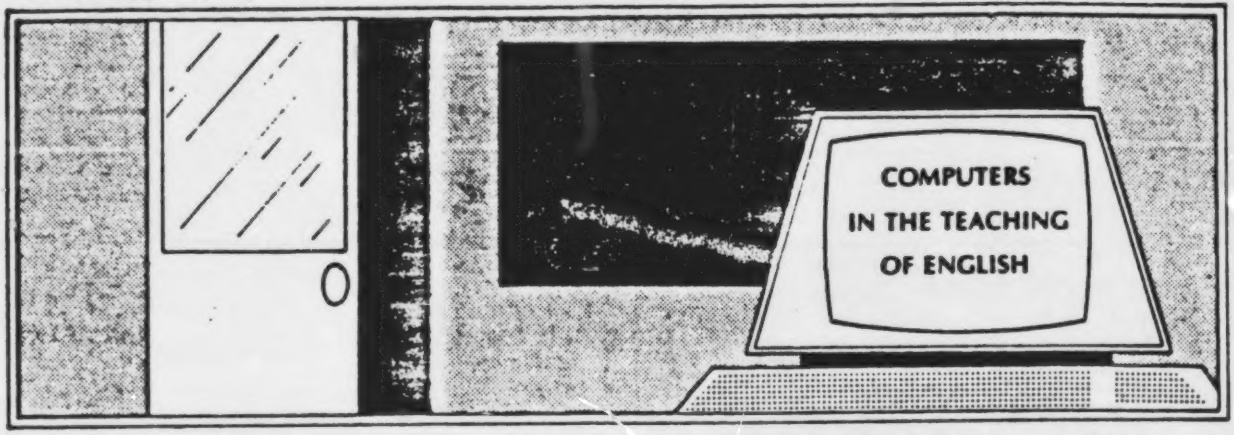

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Robert Shostak
School of Education
Florida International University
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Miami, FL 33199

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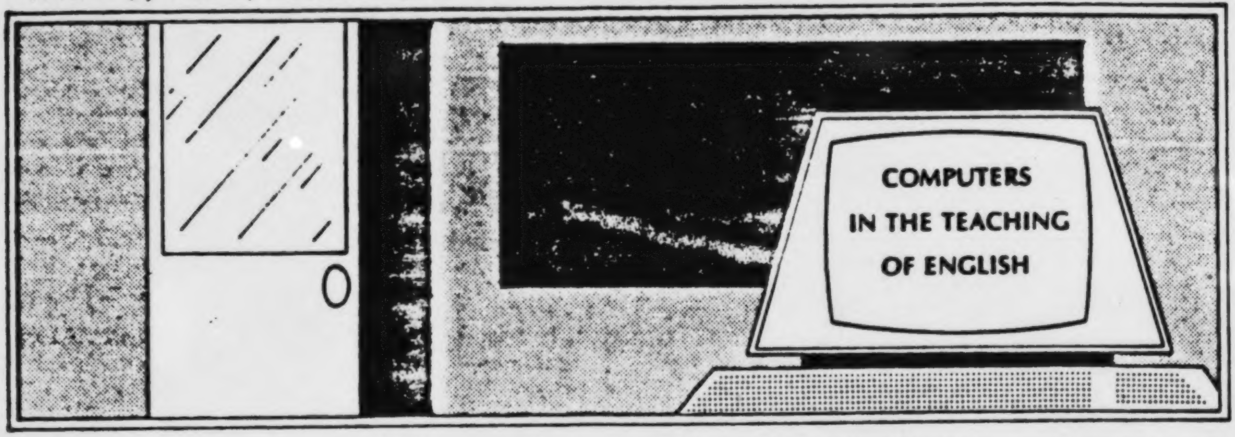

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APPENDIX C

USER MANUAL

COMPOSITION INSTRUCTION ON A MICROCOMPUTER

Ann Humes

SWRL Educational Research and Development
4665 Lampson Avenue
Los Alamitos, CA 90720

USER MANUAL

COMPOSITION INSTRUCTION ON A MICROCOMPUTER

BACKGROUND INFORMATION AND RATIONALE

Scholarly concern with composition has traditionally focused on analysis and criticism of the resulting document rather than on the means of producing that document. However, authorities have become increasingly concerned with instruction that stresses the process rather than the product of writing (Humes, 1980b). Correspondingly, SWRL composition instruction, designed for use on a microcomputer, focuses on the composing process and is based on an instructional model of that process (Humes, 1980a).

The microcomputer is one of the newest and most versatile media for human communication. Historically, computer-assisted instruction has been used to teach math, reading, and component skills of writing, such as spelling and punctuation. Hardware and software limitations precluded the design of computer instruction that required actual composing activities. Only relatively recent developments, such as the word processor, have enabled designers and developers of instruction to produce courseware that involves the student in actual text production and manipulation.

In the instructional application described here, the microcomputer functions as both recipient and "speaker" of the communication. As a recipient, the computer processes the written input and requires that certain conventions be followed for the communication to be received and deciphered accurately. For writing instruction, this rigidity can teach students that certain rules, such as the use of periods to end sentences, are necessities that often determine whether a communication is received at all or, if it is received, whether the message is understood accurately.

The microcomputer also functions as a speaker because it interacts with the student by presenting instruction and examples, providing interesting practice, pointing out errors, and requesting clarification of ambiguities. This interactive feedback makes the computer an ideal audience for the student writer. For example, microcomputer-presented exercises guide and are guided by the student's responses. Therefore, the student can work in privacy, proceeding at his or her own rate. This privacy can make instructional tasks less threatening.

Microcomputer instruction offers other benefits to students as well. For example, it permits truly individualized composition instruction because students proceed at their own pace and are given as little or as much instruction as they need, as indicated by their computer-analyzed performance.

Immediate feedback is another microcomputer capability that is beneficial to students. A time delay is commonly necessary for teacher response to a student's writing. However, the computer is capable of an instantaneous response, thus providing the student with immediate reinforcement or assistance.

Microcomputer instruction is also highly motivating to students because of its game-like nature. Additionally motivating are the lively graphics: They not only add interest, but they also facilitate presentation of instruction that is less abstract. For example, in the sentence-combining module, students do not merely see a set of simple sentences and the resulting combined sentence frozen on the page along with an abstract explanation of the process; rather, instruction on the computer moves the words and cues around so that students actually see how to combine sentences--the graphics reinforce the instructional concepts.

Flexibility is another asset of microcomputers with word-processing capabilities. Part of the problem for the student writer is the fixed, immutable quality of the symbols on the page: The process of changing, making insertions, and rearranging the text is so laborious that the writer frequently gives up long before he/she is satisfied. However, word-processing features enable the writer to make changes with ease. The writer can add, delete, or change single characters, words, phrases, sentences, and paragraphs in order to improve the final product.

PREREQUISITES

Student Prerequisites

Students must be in grades 6-12 and have previous experience with the microcomputer that will be used in the school. They must also have previous experience with typing because SWRL materials do not provide instruction on this skill.

Students must be free to work with on-line instruction for 20 minutes per day, the approximate amount of time for which the microcomputer lessons are designed. Individual students may complete lessons in less time; however, if the student finishes a lesson within 10 minutes or less after logging on the microcomputer, the next lesson in sequence is presented.

Hardware Prerequisites

In order to implement the instructional materials, a school will need the following equipment, as described in detail by Russell (1980):

Apple II microcomputer (keyboard, CPU, power supply, and CRT).

At least one 5 1/2-inch floppy disk drive.

An interval/frequency timer (e.g., CCS clock card for Apple II).

A printer (optional).

CONTENT OF INSTRUCTION

The content of composition instruction on the microcomputer consists of sentence-combining techniques, revision processes and strategies, and actual text production.

Sentence Combining

Sentence-combining instruction and practice enhance students' syntactic fluency (Lawlor, 1980; Humes, 1980c). Therefore, sentence-combining techniques should be part of any program that teaches the composing process. Furthermore, research indicates that this instruction can be appropriately implemented at this level (Lawlor, 1980; Humes, 1980a). Comprehensive content for sentence-combining instruction is described in Lawlor (1981).

Revision

Changing the content or arrangement of composing occurs when the writer reviews the text and sees mismatches between his/her intended solution of the composing problem and the actual resolution incorporated in the text. Therefore, writers need to learn that revision is a normal and expected part of writing. Despite this need, the process of revision is largely neglected in current composition instruction. However, the computer can make text revision relatively painless and even enjoyable. Consequently, the student will learn that the writing process takes place over time, resulting in a written product that is gradually shaped into a form acceptable to both writer and audience (see Gentry, 1980). The knowledge, skills, and techniques for changing, or revising, text are discussed by Gentry (1980) and described by Humes (1980c).

Text Production

Text production includes generating, arranging, and translating content. Generating entails gathering information to write, whether that information is material from external sources or content discovered within the writer's mind. When data are not gathered from external sources, the writer must search his/her own mind for information. This search may involve the use of heuristic probes for generating content; these probes generally are formalized sets of self-questions the writer (or, in this case, the microcomputer) uses to draw on content stored in memory.

Arranging is the process of ordering content; it contributes form to a final product. Arranging may involve "deletion" of content when more content is generated than is needed. Students learn both the process of arranging and specific paradigms that can facilitate ordering content for different discourse modes and product forms.

Translating is the process of transforming content from one form of symbolization (thought) into another form of symbolization (graphic representation). Translating while functioning simultaneously in other elements of the process makes huge demands on the writer's cognitive processes (Humes, 1980a). This mental load becomes less difficult as an increasing number of translating skills become automatic rather than consciously driven. This move to "automation" is expedited by instruction and practice. Translating skills can be categorized as skills of language, coherence, and form.

Appropriate content for composition instruction on text production is described by Humes (1980c).

INSTRUCTIONAL COURSEWARE

The instructional courseware is designed to be used by students in grades 6-12 and is to be completed on a microcomputer. These materials do not consist of the typical workbook-like multiple-choice and fill-in materials characteristic of currently available computerized instruction. Rather, these interactive materials are designed to involve students directly in productive tasks. For example, in the lessons on sentence combining, students actually construct combined sentences rather than select the appropriately combined answer choice.

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APPENDIX D

EVALUATING TEXTUAL RESPONSES*

Joseph Lawlor

SWRL Educational Research and Development

Under a contract with the National Institute of Education, my colleagues and I here at SWRL have been investigating the use of microcomputers to teach writing. The purpose of our investigation has been to explore ways in which the computer might be useful for teaching the high-level skills that are associated with composing. Although much of our work has been exploratory, our experiences in designing interactive writing materials may be of interest to developers--or potential developers--of computer-based writing instruction.

When we began our project, one of our first tasks was to find out what kind of instructional programs were currently available for teaching writing. Not surprisingly, we found the field to be very limited. Most of the available courseware was of the drill-and-practice variety, dealing primarily with the form skills of writing, such as spelling, usage, and capitalization. Although such programs can be useful, very few of them require the student to write anything longer than a single word. In fact, since many of the programs employ multiple-choice formats, the student commonly responds by simply typing a single letter or number.

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*From J. Lawlor (Ed.), Computers in composition instruction. Los Alamitos, CA: SWRL Educational Research and Development, 1982.

However, when students write, they are expected to produce sentences and paragraphs, not single words or letters. Consequently, we decided to focus our efforts on designing computer-based materials that would require the actual production of text. And we also felt that our programs should be able to evaluate that text.

After exploring a number of ideas for instruction, we decided that our initial effort would be to design a program for teaching sentence combining. There were several practical reasons for this decision. First, sentence combining has been shown to be an effective technique for improving the sentence structure of students' writing. Second, after reviewing the research on sentence combining, we had a pretty good idea of what the scope and sequence for such a program should be. And finally, we felt that while sentence-combining instruction would allow us to work with textual responses, it would also allow us to limit the range of those responses, making the evaluation task more manageable.

Evaluating Student Responses

As the framework for our sentence-combining program began to take shape, we soon discovered that evaluating students' responses was not going to be an easy task. The computer--for all its remarkable electronic sophistication--hasn't the faintest idea of what a sentence (or even a word) is. When a computer stores text in its memory, it stores the text simply as a "string" of characters, that is, a particular sequence of letters, spaces, and symbols. Although the machine does not "know" what the string means, it can compare one string to another and determine whether or not the two are equal (i.e., whether or not the strings contain exactly the same characters in exactly the same sequence). Consequently, the easiest way to evaluate the student's response would have been to compare the student's sentence to the correct answer. If the two strings were not equal, the machine could then tell the student that his or her answer was wrong and branch to some type of remedial instruction.

However, we felt that there were degrees of "rightness" and "wrongness" that had to be considered in evaluating the student's response. For example, in the following item, a student who had correctly combined sentences (1) and (2) would produce sentence (3):

(1) Tom fell to the ground.

(2) Tom ripped his uniform. (and)

↓

(3) Tom fell to the ground and ripped his uniform.*

But consider the following hypothetical responses:

(4) Tom fell to his uniform.

(5) tom fell to the grond and ripped his unifrm

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*This item format was originally developed by Frank O'Hare (*Sentence Combining: Improving Student Writing without Formal Grammar Instruction*. Urbana, IL: National Council of Teachers of English, 1973). The parenthesized word is a "signal" that tells the student how to combine the sentences. In this case, the student is to conjoin the two predicate phrases with *and*.

To the computer, both of these responses would look equally wrong; neither of them would match the correct answer. Yet there are important differences between the two responses. A student who enters the first sentence evidences little or no understanding of the sentence-combining instruction. But a student who enters the second sentence seems to comprehend the material; errors in the second sentence reflect spelling, capitalization, or typing problems--not problems with sentence combining.

Clearly, a simplistic evaluation of the student's response was not appropriate for our sentence-combining program. What we needed was a system for "parsing" the student's sentence--a system that would examine the sentence and distinguish among the various types of errors a student might make.*

Designing the Parser

We began specifying the functions of our parsing system by classifying the errors that students might make into two broad categories. The first we called "syntax" errors--errors that reflected a misunderstanding of the sentence-combining task, as exemplified by response (4) above. The second category included errors of form

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*The term parsing as used here does not refer to formal grammatical analysis. Although computer programs have been developed that can perform such analyses, these programs normally require extensive amounts of computer memory--more memory than is available in the microcomputer with which we were working. For a review of recent developments in the field of computer-based grammatical analysis, see Hendrix, G., and Sacerdoti, E., "Natural Language Processing: The Field in Perspective," *Byte*, September, 1981.

(spelling, typing, capitalization, punctuation), as illustrated by response (5). A student whose response contained a syntax error was to be routed back through remedial instruction. However, a student whose sentence contained only errors of form was to be allowed to fix those errors until the sentence matched the desired response.

Several of the parsing routines were relatively easy to specify. As it is now written, the program first checks for a capital letter at the beginning of the student's sentence. If the first letter is not a capital, the program asks the student to make the necessary correction. If the student does not change the letter at this point, the program will automatically make the correction. A similar routine checks for the presence of a period at the end of the sentence.

The next parsing routine checks for the presence of the sentence-combining "signal" in the student's sentence. If the signal is not present, the program asks the student to add it. At this point, if the student does not add the signal, the program detects a syntax error and branches to the remedial instruction.

Next, the program counts the number of words in the student's sentence. (A word is defined as a series of letters followed by a space, or, in the case of the last word in the sentence, followed by a period.) If the number of words in the student's sentence does not correspond to the number of words in the correct response, the student is informed of the discrepancy and asked to revise his or her response. Failure to revise the sentence correctly results in a syntax error and a branch to remedial instruction.

At this point in the evaluation--if the student has not been routed back through the remedial instruction because of a syntax error--the student's sentence now contains an initial capital letter, a terminal period, the sentence-combining signal, and the correct number of words. All that remains now is to check for spelling errors. Although checking for such errors would seem to be a relatively straightforward task, we found that this was actually one of the most complicated routines in the whole program. We wanted the spelling routine to examine each word in the student's sentence, compare it to the corresponding word in the correct answer, point out any word that was misspelled, and ask the student to correct the misspelling. We also wanted the routine to include a spelling corrector--that is, if the student did not correct the word on the first attempt, we wanted the program to correct the word automatically, so that students would not get bogged down in endless editing tasks, which would contribute little to the primary purpose of the instruction.

The major problem we encountered in designing this routine was defining a spelling error. Consider, for example, the following responses to the item listed above. Both of these responses would have passed through the previous parsing routines:

(6) Tom fell to the ground and he fell down.

(7) Tom fell to the grond and ripped his unifrm.

Obviously, the errors in sentence (6) are not spelling errors. But to the computer they might appear to be. For example, when the machine compares the seventh word in the student's sentence (he) to the seventh word in the correct answer (ripped), the computer will detect only that the two words are not identical. Without additional programming, the computer cannot tell whether the student's word is misspelled or whether it is simply the wrong word. Consequently, we had to develop an additional parsing routine to examine each word in the student's sentence, letter by letter. We then defined "spelling" errors as discrepancies that resulted from one of the following conditions:

- The word contains one letter that is different from the corresponding letter in the correct word (e.g., grount for ground).
- The word contains one letter too many (e.g., geround) or one letter too few (e.g., groun).
- The word contains one pair of transposed letters (e.g., gruond).

All other discrepancies in the student's text are treated as syntax errors. Thus, when the computer encounters the word he in sentence (6), the student is sent to the remediation routine. However, the discrepancies in sentence (7) are treated as spelling errors: The student is asked to correct the errors, and the program then proceeds to the next activity in sequence.

Conclusions

Our experience in designing the sentence-combining program has led us to form several conclusions about computer-based composition instruction--conclusions that are likely to have important implications for subsequent development efforts in this field. First, designing interactive programs that evaluate textual responses is not a simple task. Programs that require only minimal responses from students--

entering a single word, a letter, or a number--can evaluate those responses quickly and easily. However, extended textual responses demand more complex evaluation. Even in our sentence-combining program, where student input is reasonably constrained, evaluation must distinguish among many different types of errors, responding to each type in a different way. Imagine the complexity that would be involved in evaluating less constrained responses, for example, a narrative paragraph that must be checked for appropriate transitional expressions.

Another conclusion we have drawn from our experience is that no matter how sophisticated our evaluation techniques become, they will still not account for all the responses that students might possibly make. The best we can hope for is a reasonable compromise. An evaluation routine has to be flexible enough to handle a variety of error types, but it must not be so flexible that it allows faulty input, such as typing grated for ground. In evaluating textual responses, we have to remember that there are definite limits to what we can do.

Finally--and perhaps most importantly--we have found that the extra effort required to design sensitive evaluation routines pays off in the long run. Students who participated in pilot studies of our sentence-combining program seemed to appreciate the way their errors were handled. Most of the students were very willing to revise their sentences once the computer provided the appropriate prompt. Students tended to view the computer as a partner rather than as an adversary, and, after all, that is precisely what a good composition teacher should be.

APPENDIX E

SOUTHWEST REGIONAL LABORATORY
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A SEQUENCE FOR SENTENCE-COMBINING INSTRUCTION

Joseph Lawlor

ABSTRACT

Although sentence-combining practice has been shown to be an effective instructional technique for improving students' writing, scant attention has been paid to the appropriate sequence for sentence-combining instruction. This paper discusses the need for such a sequence and outlines several principles that should be considered. The paper also proposes a sequence for five different types of syntactic structures that are normally included in sentence-combining instruction: coordinates, adverbials, restrictive noun modifiers, noun substitutes, and free modifiers.

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A SEQUENCE FOR SENTENCE-COMBINING INSTRUCTION

Joseph Lawlor

Sentence-combining practice has been shown to be an effective technique for improving the syntactic skills of student writers at all academic levels: elementary (e.g., Perron, 1974), middle school (e.g., O'Hare, 1973), secondary (e.g, Sullivan, 1977), and college (e.g., Daiker, Kerek, & Morenberg, 1978). Generally, these studies agree on the positive effects of sentence-combining practice: enhanced syntactic fluency and, for the most part, improvement in the overall quality of students' writing (Lawlor, 1980).

The basic format of sentence-combining exercises is very simple. Students are given a series of short "kernel" sentences, and are told to combine these sentences into a longer, more elaborate sentence. The important information from each short sentence must be retained in the longer sentence, thus requiring students to transform and manipulate the structure of the original sentences. The particular manipulations to be performed can be controlled through the use of sentence-combining "signals" (i.e., parenthetical cues, underlining), as in Figure 1.

Alex lived in a city.
The city was large.
The city was located in
Northern California. (THAT)

Alex lived in a large city that was located in Northern California.

Fig. 1. Sample sentence-combining exercise; from Perron, 1974, p. 260.

Although a large body of research supports the value of sentence-combining practice, there is little agreement in the literature on what may be an important issue in sentence combining--the sequence for instruction. Which sentence-combining operations should be covered early in a sentence-combining program? Which should come next? And is there any justification for postponing certain structures until later in the program?

Unfortunately, the sentence-combining research doesn't offer much help in answering these questions. Both experimental programs and published sentence-combining textbooks reveal a wide disparity of opinion on the sequence for instruction (Lawlor, 1981). Various sentence-combining operations, such as noun-clause substitution, relative-clause embedding, and free modification, seem to be presented in a different sequence in each program. Kleen (1980) reports similar findings. She examined seven published sentence-combining textbooks and found no agreement across texts on the sequence for instruction.

This lack of agreement on the appropriate sequence for sentence-combining activities may stem from an assumption that underlies the technique. Authorities have speculated that sentence combining works because it exploits the linguistic abilities that students have already developed through oral language acquisition. According to this view, sentence combining doesn't really teach anything "new" about language; the technique merely asks students to apply their oral language ability to the written medium (cf., Strong, 1973, p. xiii). Consequently, the sequence for instruction would seem to be relatively unimportant because students would not be likely to find one sentence-combining operation more "difficult" than another.

However, there are several reasons to suspect that the sequence for sentence-combining instruction may be more critical than we have considered it in the past. Studies of language development indicate that the process of acquiring syntax takes place over a longer period of time than we once thought (Hatch, 1969; Golub, 1969; Kennedy, 1970). In one review of the developmental research, Menyuk (1977) states that "some structures are acquired at a slower rate by some children but are acquired by all, while others are not acquired even by some adults" (p. 129). The evidence suggests that we can no longer assume that students at a certain "magic" age--6, or 9, or 12 years--are able to control all the syntactic manipulations available in their native language. In addition, students whose native language is not English may not bring the same oral language facility to sentence-combining instruction that native speakers do. And finally, there is some evidence that certain written syntactic structures occur rarely in oral language. For example, people do not ordinarily speak in the "cumulative" sentences advocated by Christensen (1968). Such structures are much more characteristic of the written medium, and students with limited reading experience may not be familiar with them (Mellon, 1979).

So perhaps sentence combining does indeed teach something "new" about language. And if this is true, then the sequence for instruction may be a critical factor. Studies of the natural development of oral and written language point out two general trends that ought to be considered in sequencing sentence-combining instruction. First, language users develop basic sentences before they learn to elaborate on these sentences. When elaborations do appear, they occur first in the predicate phrase. For example, children will usually use relative clauses to modify direct objects before they use such clauses to modify subject nouns. Consequently, it makes sense to introduce sentence-combining operations in the predicate phrase first before introducing them in other sentence positions.

Second, there is a general tendency to elaborate with full clauses first, followed by phrases and words that are derived from full clauses. This suggests, for example, that relative clauses should be sequenced before reduced clausal structures such as participial phrases and appositives.

Specific recommendations for sequencing sentence-combining activities are presented in Appendixes A-E. For purposes of discussion, the various syntactic structures that are normally included in sentence-combining instruction have been classified into five categories: coordinates, adverbials, restrictive noun modifiers, noun substitutes, and free modifiers. Within each category, the structures are further divided into three levels. These levels do not correspond to grade levels; nor do they represent content that should be covered in a semester or a year of instruction. The levels are merely guidelines for referencing structures across categories. Thus, for example, in introductory sentence-combining lessons, instruction might include compound sentences, single-word adverbs, single-word adjectives, and noun clauses as direct objects (all Level I structures).

Coordinates

Appendix A lists the sequence for coordinate structures. Coordination is a syntactic operation that appears very early in children's writing. Young writers tend to use many coordinate structures (especially compound sentences), while older writers use considerably fewer (Hunt, 1977). However, even within this category, there are indications that certain types of structures are coordinated at different developmental stages. For example, in one fourth-grade sentence-combining study, Miller and Ney (1968) found that compound prenominal adjectives were very difficult for their students to produce, and that error rates remained high even after several training sessions. Ney (1974) speculates that many of these fourth-graders were simply not "developmentally ready" (p. 158) for this type of sentence-combining operation. Consequently, it makes sense to introduce compound adjectives after structures such as compound direct objects and compound subjects.

Adverbials

The recommended sequence for adverbial structures is listed in Appendix B. In general, the use of adverbial sentence-combining operations is not associated with syntactic maturity (Hunt, 1965; O'Donnell, Griffin, and Norris, 1967). That is, younger and older writers tend to use adverbials with about the same frequency. However, there are differences in the types of adverbials used at different levels. For example, time clauses appear very early in children's writing, perhaps reflecting an instructional emphasis on narrative writing. Nevertheless, there seems to be some justification for constraining how these clauses are introduced in a sentence-combining program. Hatch (1971) reports that kindergarten and second-grade students found sentences much easier to comprehend if the occurrence of a time clause in a sentence matched the temporal order of the events being narrated. For example, in the sentence I finished the test before the bell rang, finishing the test occurs before the ringing of the bell. Consequently, the clause order corresponds to temporal order. If this principle is violated, as in I finished the test after the bell rang, the sentence becomes much more difficult to process.

A different effect has been observed for adverb clauses of reason: Sentences are easier to process if the result is stated before the reason, as in We stopped for lunch because we were hungry (Weaver, 1979). Consequently, sentence-combining programs ought to introduce the simpler arrangement first, followed by the more difficult order.

Restrictive noun modifiers

Appendix C lists the sequence for restrictive noun modifiers. The use of these modifiers has been found to be a valid index of syntactic maturity. Relative clauses, in particular, account for much of the increase in the length of writers' sentences as they mature (Hunt, 1965). The recommended sequence for relative clauses reflects one of the general principles discussed above. Relative clauses are first introduced in the predicate phrase (Level I) and then in the subject (Level II). Level II also includes phrasal modifiers, such as appositives and participials, again reflecting the general tendency to elaborate first with full clauses, followed by reduced-clause structures.

Level III includes one type of restrictive noun modifier that seems to appear at a late developmental stage: the prenominal participle. Gebhard (1978) compared the syntax used by three groups of writers: (1) college freshmen rated as poor writers, (2) college freshmen rated as superior writers, and (3) professional writers. She found that both the professional writers and superior freshmen used prenominal participles significantly more often than did the poor writers. Consequently, there is some justification for sequencing these structures late in a sentence-combining program.

Noun substitutes

Appendix D displays the sequence for noun substitutes--clauses and phrases that function as nouns in a sentence. Noun clauses appear fairly early in children's language, but they are almost always used as direct objects and complements, as in Level I (Kleen, 1980). At Level II, these clauses are introduced in the subject position. These are followed by infinitive phrases, once again reflecting the developmental trend from clause to phrase. Level III contains several nominal structures that seem to be characteristic of mature prose. These include noun clauses as objects of prepositions and verbals, gerunds and gerund phrases, and the "deferred-subject" sentence, in which it replaces a noun substitute as the grammatical subject.

The final nominal structure listed at Level III is one that may be somewhat controversial--the derived noun phrase. Gebhard (1978) suggests that the use of such nominals contributes to a "strong, succinct prose style" (p. 221). Stotsky (1981) claims that these derived nominals are indeed characteristic of mature expository writing. However, authorities who are concerned about the readability of modern prose (e.g., Hake and Williams, 1981) are very critical of this nominal style. Nevertheless, it seems that derived noun phrases should be covered in sentence-combining instruction, but with cautions attached to satisfy readability considerations. Because of these complications, it makes sense to cover derived nominals relatively late in the instructional sequence.

Free modifiers

Appendix E lists the sequence for introducing free modifiers in a sentence-combining program. Such modifiers are associated with mature prose, particularly when they are used in sentence-final position in cumulative sentences (Christensen, 1967, 1968; Wolk, 1970). Christensen (1968) distinguishes free modifiers from the restrictive noun modifiers discussed above:

> Free modifiers . . . are modifiers not of words but of constructions, from which they are set off by junctures or punctuation. Grammatically, they are loose or additive or nonessential or nonrestrictive. The constructions used are prepositional phrases; relative and subordinate clauses; noun, verb, adjective, and adverbial phrases or clusters; and, one of the most important, verbid clauses or absolutes. (p. 577)

The sequence listed in Appendix E includes free modifiers at Level III only. There are several reasons for sequencing these structures late in a sentence-combining program. As noted earlier, free modifiers (and cumulative sentences) are more frequent in written language than in oral language. Unless students have had considerable experience reading modern prose, they are likely to have difficulty with these structures. In addition, free modifiers are essentially stylistic options. Their use depends upon students having reached a cognitive stage in which they can view their written works as what Mellon calls "craftable artifacts" (1979, p. 21). Thus, instruction in this kind of nonrestrictive, free modification should be sequenced at a point where students are most likely to benefit from it. And that point is relatively late.

Conclusion

Sentence-combining practice can help students develop the syntactic skills they need to produce clear, lively prose. However, an effective writing program must certainly include instruction on other facets of the composing process, such as generating and arranging ideas, and revising and editing text. Consequently, sentence combining practice should be considered as an important component--but not the only component--of a comprehensive writing program.

The appropriate sequence for sentence-combining activities has received little attention from researchers and instructional designers. In proposing such a sequence here, the author is not suggesting that sentence combining must be bound to some rigid, unyielding instructional sequence. Certainly, more research is needed, and as our knowledge of language development increases, the sequence for sentence-combining instruction must be modified. But even with the knowledge that is currently available about language development, certain trends are evident. And instructional developers should certainly take advantage of these trends as they design sentence-combining programs.

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Appendix A

Sequence for Coordinate Structures

Level I Compound sentences.

Judy raked the lawn, and John watered the flowers.

Compound structures within the predicate phrase.

Ellen ordered a hamburger and a coke.

I finished my homework and went to bed.

The room was small and stuffy.

Compound subjects.

Susan and Dave went to the movies.

Level II Compound prenominal adjectives.

The cold and hungry campers huddled around the fire.

Level III Compound objects of prepositions and verbals.

The train stopped in large cities and small villages.

She expects to visit the museum and the cathedral.

Appendix B

Sequence for Adverbial Structures

Level I Single-word adverbs.

Jack walked carefully.

Prepositional phrases of place/motion.

Maria hit the ball over the fence.

Adverb clauses of time: clause order matches time order.

I finished the test before the bell rang.

Adverb clauses of reason: result stated before reason.

We stopped for lunch because we were hungry.

Level II Adverb clauses of time: clause order does not match time order.

We went to the library after class was over.

Adverb clauses of reason: reason stated before result.

Because my brother was late, we had to start without him.

Prepositional phrases of time.

Jim visited the zoo on Saturday.

Adverb clauses of condition.

We'll go on a hike if the rain stops soon.

Appendix B (continued)

Adverbial infinitives.

Rick is waiting to hear from you.

Level III Prepositional phrases of cause, manner, and concession.

The picnic was cancelled because of bad weather.

The bomb exploded with a muffled roar.

Jerry learned to skate despite his handicap.

Adverb clauses of concession and purpose.

Although the sun was shining, the air was very cool.

He fixed the door so that it wouldn't squea[illegible]

Appendix C

Sequence for Restrictive Noun Modifiers

Level I Single-word prenominal adjectives.

Terry bought a new car.

Relative clauses modifying object: relative pronoun as subject.

The police caught the burglar who stole the jewels.

Relative clauses modifying object: relative pronoun as object.

I enjoyed the book that you gave me.

Relative clauses modifying object: relative prounoun as possessive.

We met a woman whose son is famous.

Level II Relative clauses modifying subject: relative pronoun as subject.

The team that wins this game will be the state champion.

Relative clauses modifying subject: relative pronoun as object.

The cookies that Jean baked are delicious.

Appendix C (continued)

Relative clauses modifying subject: relative pronoun as possessive.

The man whose car was stolen called the police.

Adjectival prepositional phrases.

The girl on the porch is my sister.

Post-nominal participial phrases: present and past.

My teacher is the woman talking to Pam.

We toured a castle built many years ago.

Restrictive appositive.

My friend Rita won the spelling bee.

Null-pronoun relative clauses.

Steve read the story you wrote.

Post-nominal infinitive phrases.

We had no reason to doubt his story.

Level III Prenominal participles: present and past.

That barking dog kept us awake all night.

These cans are made of recycled aluminum.

Appendix D

Sequence for Noun Substitutes

Level I Factive noun clauses as direct objects.

Mary thought (that) you were here.

Interrogative noun clauses as direct objects.

Pete knows where the treasure is buried.

Level II Factive and interrogative noun clauses as subjects.

(The fact) that we are out of time worries me.

How the gold disappeared is a mystery.

Infinitive phrases.

Maria wants to meet Dr. Peters.

(For us) to arrive early would be a good idea.

Wh word + infinitive phrases.

Bob learned how to dance.

Where to find the money is the problem.

Level III Factive and interrogative noun clauses as objects of verbals and prepositions.

Nancy needs to know what we have decided.

Despite the fact that John is not very tall, he is a good basketball player.

Gerunds and gerund phrases.

Pete enjoys swimming.

Running a business is hard work.

Appendix D (continued)

It extraposition with noun clauses, infinitives, and gerunds.

It surprised me *that he was such a good student*.

It took a long time *to find the solution*.

It was nice *seeing my old friends*.

Derived nouns and noun phrases.

Carelessness causes many fires.

The citizens were enraged by *the attempted assassination of the prime minister*.

Appendix E

Sequence for Free Modifiers

Level I

Level II

Level III Nonrestrictive relative clauses.

This satellite will orbit Jupiter, which is the largest planet in the solar system.

Nonrestrictive appositives.

The mayor, Ann Green, spoke to the reporters.

Participial phrases.

Ted stood on the bridge, staring at the river below.

The Scrap Iron Kid fell to his knees, stunned by a left hook.

Adjective clusters.

The mule, stubborn and ornery, refused to move.

Prepositional phrases.

Martin walked softy, like a cat stalking a bird.

Appendix E (continued)

Nominative absolutes.

The deer stood quietly, its antlers silhouetted against the setting sun.
